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TELEPHONE ENGINEER AND MANAGEMENT

THE NATIONAL TELEPHONE MAGAZINE

VOL. 48, NO. 5

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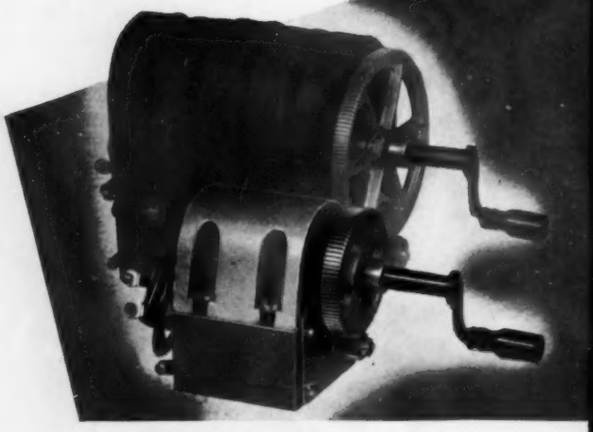

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TELEPHONES, SWITCHBOARDS
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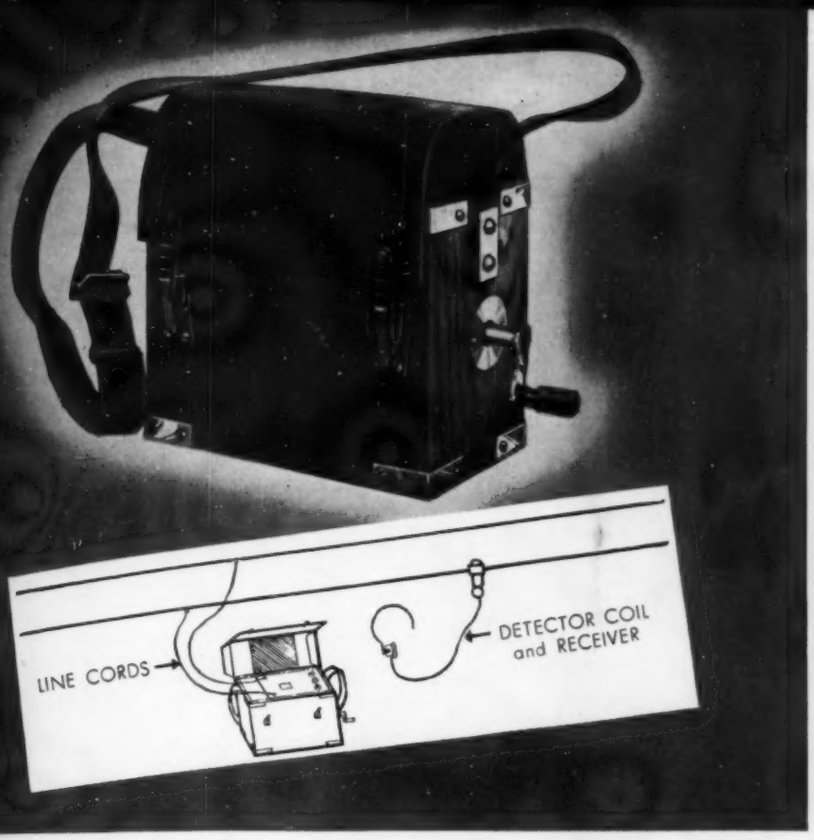
SINCE 1907



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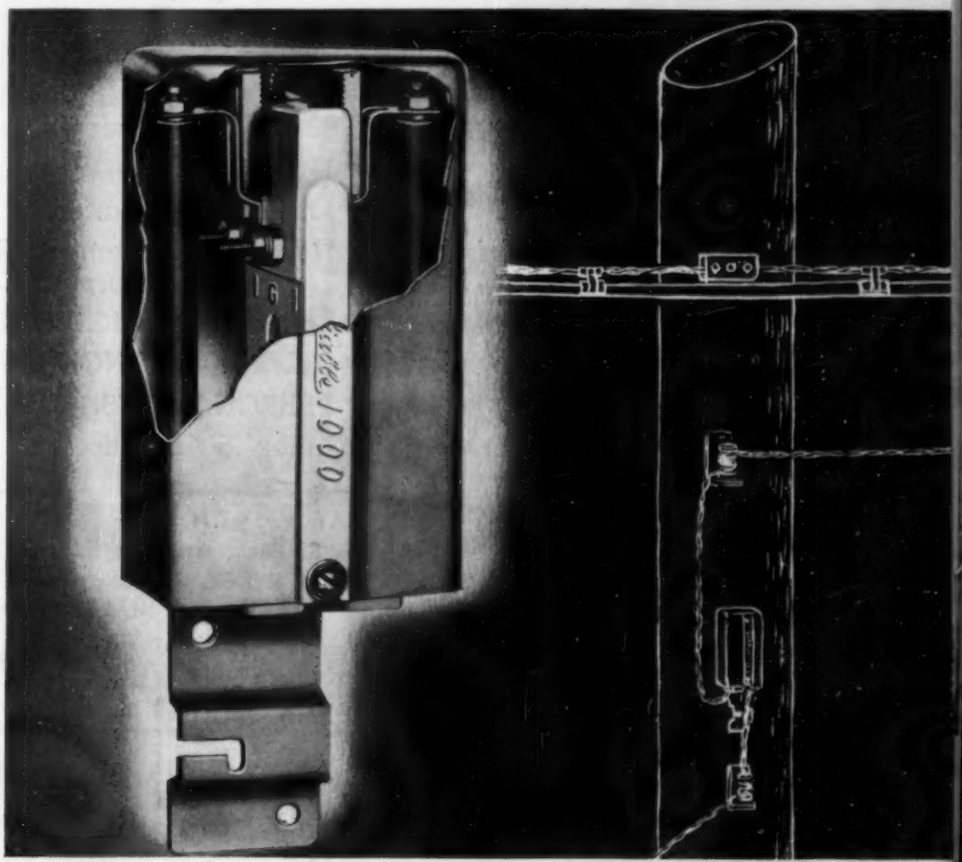

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LINE UP WITH *Kellogg* FOR LINE SUPPLIES ★

When we edited and checked the exclusive article John H. Agee authored for this issue titled "Employee Relations" we were so engrossed in thought after the first few pages of the manucript that we took twice our usual time to do our job. We think it is the finest article on this subject for the operating telephone company we have ever read. After reading it we wish you would write us your reactions. It starts on page 25.

▼

Your editor and his camera have been making almost all of the conventions and right now is suffering from lack of space to do all of them justice. These reports and pictures will be run as quickly as possible so if you think our camera got you in one of our pictures be looking for them in succeeding issues.

▼

The article on page 29 by Senator Arthur E. Nelson is the same paper he delivered at the recent Illinois telephone convention. It is so important to the smaller telephone company that we have published the paper in its entirety. It has to do with rates for service and we urge you to check it thoroughly. *R.W.S.*

TELEPHONE ENGINEER AND MANAGEMENT

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THE TELEPHONE WAS *INDISPENSABLE* IN THE WORLD'S GREATEST SALVAGE JOB

The gigantic task of refloating the S. S. Normandie, now known as the U. S. S. Lafayette, was started by a telephone call to one of the world's foremost naval architects.

In the ensuing 18 months of toil, telephone lines were kept busy. The circuit between Pier 88 and the salvage company's office was seldom closed. Telephone discussions between New York and the Navy Department in Washington were frequent. Five 'phones were installed at vital points on the operation—to control all action regarding materials, construction, labor, progress, etc. Underwater communication enabled engineers to talk with divers. The refloating of the Normandie is truly a story of teamwork by telephone. A teamwork resulting from the telephone tradition—faithfulness and dependability.

You who uphold the telephone tradition will find in Exide Batteries the same dependability for which telephone service is famous throughout the world. Since 1895, Exides have been proving themselves worthy of that trust.

ARMY E NAVY

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MEET POLE-LINE EMERGENCIES PROMPTLY WITH GraybaR's HELP ON SUPPLIES

● True, Graybar hasn't the answer to such wartime emergencies as this pole-bean crisis, but it's surprising how often our supply service *can* overcome today's difficulties.

When time is short, you can "leave it to Graybar" to pursue every possibility of rounding up hard-to-get supplies. In case of floods, fires, and windstorms, Graybar men have the experience to proceed without detailed order specifications. They can seek out essential items from a whole network of Graybar offices where local stocks are maintained.

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3528

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IN OVER 80 PRINCIPAL CITIES

Executive Offices: **GRAYBAR BUILDING, NEW YORK 17, N.Y.**

25 YEARS AGO THIS MONTH

Taken from TELEPHONE ENGINEER files of May, 1919.

Plans for a world-wide wireless telephone system which were under consideration by the General Electric Company were told in the May, 1919, TELEPHONE ENGINEER. Two devices invented by Ernst F. W. Alexanderson—the bridge receiver and the barrage receiver—made the plans possible.

★

The installation of a telephone dispatch service between Jefferson City and St. Louis on the Missouri Pacific Railroad was announced in TELEPHONE ENGINEER.

★

W. T. Cox, state forester of Minnesota, announced that miles of new telephone lines would be built during 1919, at township expense, to increase fire protection in the northern part of the state. Settlers who furnished their own telephones were permitted connections to the line without cost. The townships built and maintained the trunk system for public safety.

★

The War Trade Board made public a list of commodities which it was possible to import into England without special license in May, 1919. Instruments and machinery in the list included telephone apparatus. Minerals included nickel, oxide, magnesite and antimony ore.

★

Federal dictation of rates for telegraph, telephone and railroad service within the state of Illinois in 1919 received a setback when Judge Landis handed down the decision that the state had the power to uphold intrastate telegraph rates. At the same time, Judge Landis dissolved the injunction which he granted to Postmaster General Burleson against the state utilities commission and the attorney general's office from interfering with the new rates. The decision occurred at a meeting of representatives from thirty-five states in the offices of the Illinois Public Utilities Commission where all demanded relief from federal control of utilities operating in the limits of various states.

Among the most interesting developments in the Stromberg-Carlson factories is a new machine for testing magneto and P.B.X. switchboards. Through the use of this machine, testing time for each board is cut from a normal 80 man-hours to 1 man-hour.

This instrument was originally developed for use in testing communications apparatus for the Armed Forces. It is so outstanding that in December, 1942, it won its designer—Stromberg-Carlson's Assistant Chief Inspector, Madison Butler—the citation for Individual Production Merit from the War Production Board. It has now proved to be equally usable on civilian switchboard equipment and will play an important part in Stromberg-Carlson's postwar production plans.

This machine makes more than 5,000 different inspections inside of one hour and at the same time makes them more thoroughly than was possible by previous methods. It is indicative of the Progress in Telephony that will be found all through the Stromberg-Carlson factories—progress meaning new peacetime equipment even further justifying the Company's slogan, *"There is Nothing Finer than a Stromberg-Carlson".*

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HOW BRIGHT THE *VICTORY!*

When the boys come home, and their achievements can be fully told, Americans will have cause to be proud. We on the home front have the opportunity to back up their heroism by buying War Bonds *regularly* to the full extent of our ability—we can do no less.

EDITORIAL

Announcing Executive Articles

In this issue we publish the first of a series of exclusive "Executive Articles," written by leaders of Independent telephony, on subjects of outstanding importance to the Independent telephone industry.

The current article, entitled "Employee Relations" is by Mr. John H. Agee, Vice President and General Manager of the Lincoln Telephone and Telegraph Company, with headquarters in Lincoln, Nebraska.

Mr. Agee is, and for a number of years has been, Chairman of the Employment Relations Committee of the United States Independent Telephone Association. For years he has devoted much time to problems of employees' relations of Independent telephone companies.

Other articles in this series will follow. Our aim is to publish one of them at least every other issue, if we can. These articles are written especially and exclusively for *Telephone Engineer & Management.*

They will cover subjects of outstanding managerial and other importance to Independent telephone companies. They will be written by men with years of experience in the business and with special interest and experience in the subject each covers.

We have asked the authors to "let their hair down" and say what they think. So some, perhaps all, of these articles will be provocative of thought and discussion.

It has been frequently said that the management of any business has three interests to satisfy: the customers, the employees and the stockholders. Such a statement is only three-fourths complete nowadays. Now the management has another partner to keep satisfied—namely, our Uncle Sam.

Uncle Sam must have his "cut" out of the profits of the business; he gets it before the stockholders get anything, and these days his cut is not chips and whetstones. Nor can you pay it with marbles—or pass it up like you pass a dividend.

Further, he tells many businesses what they can charge for their product and how much of it they can make and sell. He tells you whether you can pay your employees higher wages for producing it. He tells you how much and what kind of materials you can use, and a lot of other things you must or cannot do in your business.

So there are really four interests to be satisfied nowadays by the management of any business. Our aim will be to deal with all four in this series of Executive Articles.

We hope you find them valuable. We think you will.

Employee Relations

By JOHN H. AGEE

INDUSTRY today is confronted with some new problems in the matter of employee relations. Our forces are being steadily depleted by requirements of the military service. As experienced employees have been, and are being, inducted into service they have been replaced, so far as possible, by new employees, some young, some older, many without experience.

In the traffic departments of the telephone industry thousands of switchboard operators have left their steady employment within the past two years either attracted by higher war-time wages in war production plants, or to be with husband or sweetheart in some far removed army camp.

The problem of keeping employees not required for the armed forces, the problem of obtaining deferment for those trained employees absolutely essential to maintain service, and the problem of attracting new folks to our business, combine to present a real challenge to management. Added to these problems a very large amount of time must be devoted today in an attempt to comply with myriad regulations and rules of such government boards and bureaus as the Wage-Hour Division of the Department of Labor, the National Labor Relations Board, The War Manpower Commission and the National War Labor Board.

A discussion of the difficulties presented to management by these bureaus will be presented later in this article, but first let us return to the more simple problems concerning employee relations arising from war demands.

1. What position should management take on deferments?
2. What should we do about releasing employees who desire to obtain employment at higher wages in war production plants?
3. What should we do for those employees now actively engaged in the conduct of the war?
4. Having delivered them to Uncle Sam, shall we forget them?
5. What plans should be made to insure employment for them upon their return?
6. How can we keep them interested in their former jobs?

We will discuss these questions as they appear.

ON the matter of deferments, the telephone industry has certainly up to this time, cooperated fully with the requests of the army for our employees. This is particularly true in the Signal Corps service in which two years ago we assisted in organizing Signal Corps units on a voluntary basis. Since that time, however, the questions of deferments for employees who were being inducted into service has preseneted a real problem. Two general courses have been open to us. One, the adoption of the so-called Manning Plan, under which Selective Service Boards would apparently be able to ascertain which of our employees could be taken for military service with least harm to the industry. The other method, which we assume has been used by most of the smaller companies, is filling out Form No. 42 asking for deferment of employees who are considered essential to the maintenance of telephone service.

We believe management is fully justified in asking for deferment of employees whose services, due to years of training and experience, have

JOHN H. AGEE

Vice President and General Manager
Lincoln Telephone & Telegraph Company

THE author of the provocative article beginning on the preceding page is, in our opinion, the best informed Independent telephone company executive on "Employee Relations" and the laws pertaining to this subject. In fact, he started his career as a lawyer. Mr. Agee is the Chairman of the Employment Relations Committee of the United States Independent Telephone Association, and has served in that capacity for many years. He has also served as president of that group.

WE present this article as an exclusive feature of TELEPHONE ENGINEER & MANAGEMENT. We hope management and personnel will read it carefully as it is the first time, to our knowledge, that a down-to-earth discussion of employee relations has been presented either in public print or from the speaking platform on the subject that is topmost in importance to the Independent telephone operating field. As an exclusive feature of this publication all rights for reproducing are reserved—however, we anticipate a demand for reprints and ask that requests be forwarded immediately.

made them key men in the matter of maintaining service and conducting the affairs of the company.

Telephone service is recognized as being absolutely necessary to the proper conduct of the war. Our patriotic duty is to see that we have conscientiously analyzed our manpower needs and that we do not ask for deferment of employees whose duties can be readily assumed by other employees or where replacements can be readily made.

Second is the question of releasing employees who merely desire to improve their pocketbook situation by taking what is recognized as temporary employment in war plants at higher pay than the telephone industry can justify. We feel that, in those cases, if the management is paying fair wages, it is justified in refusing to release its employees. In other words, management is justified in complying with the rules and regulations of the War Manpower Commission in its attempt to maintain all essential industry on an operating basis.

The remaining questions mentioned above are more easily answered.

Many employers have atempted to help the employee who is inducted into the armed forces as a private by making up the difference in his pay for the first few months on the theory that if he has dependents they need some assistance in adjusting themselves to the loss of the family provider. In companies where employees benefit plans are in effect, the rights which the employee has accrued up to the time of his induction into the service may very properly be preserved for him.

THROUGHOUT the Bell System and in many of the Independent telephone companies, any advantages an employee may have, by reason of seniority is retained and credit given for the time which the employee has devoted to military service. After the employee has joined the armed services the management should do everything reasonable to let the soldier know that he is not forgotten by the folks back home. Letters sent at regular intervals which give information concerning activities on the home front are helpful. Many companies send modest gifts on appropriate occasions to their employees in the service. In our Company we have given each employee in military service, at Christmas time, a $25.00 "E" bond along with a specially prepared Christmas package. Since then we have sent each one another package of sweets and small items for personal use. Each one receives the Company newspaper and other bulletins as they are issued from time to time.

The employee who is in the combat zones should certainly have no cause to worry about what he will do when this war is over. Plans should be made to insure employment for these folks when they return and they should be so advised of such plans.

We think the carrying out of some such program will hold the interest of our soldiers, sailors, and fliers in their former jobs and nothing we have suggested seems to us to go beyond the bounds of reasonable employee relations.

Now a word concerning the effect of Labor laws.

The creation of bureaus with control over such matters as wages and hours in conjunction with the rules and regulations of the Wage Stabilization Act operating through the National War Labor Board, has resulted in some difficult situations. Although the War Labor Board has ample power to decide wage disputes, the National Labor Relations Act and the Smith-Connally Act are affording radical labor leaders an opportunity to delay taking wage matters to the War Labor Board. Employers are being harassed by more strikes than ever before.

Management which, for years had taken pride in the pleasant relations which existed with its employees, today finds itself all too often sitting on the sidelines, unable to discuss freely and frankly with employees the business situation or any plans it may have for advancing the interests of either the employees or the company which they represent.

A FRANK discussion of the labor-management situation as it now exists in this country should prove beneficial if, by such discussion, we could arrive at conclusions which would be helpful in remedying what we believe is rapidly becoming a confused, unhappy, and unworkable situation.

The effect of such laws as The National Labor Relations Act or The Fair Labor Standards Act has apparently erased any desire on the part of employees to cooperate with management. What can we expect when even the courts will not permit employees and management to work out their own solutions to their mutual problems. I refer now to the various court decisions throughout the country which have set aside compromised settlements in overtime claims where the basis of the claim was in dispute and where, oftentimes, there was little evidence to support the claim. I refer to the decision that management cannot settle a grievance with an individual employee or minority group of employees unless a union representative is present and negotiates the settlement. I refer also to the disposition of the courts to penalize employers because the court disagreed with the regulations or interpretative bulletins issued by the Administrator. I refer to the long delays in securing approvals of wage adjustments required under the Wage Stabilization Act. I refer again to decisions of courts in deciding whether a company is engaged in inter-state commerce. Many of these decisions are strained beyond any fair or reasonable interpretations and seem to disregard either logic or law.

Someone has recently said that what this country needs today is not more horse power, but more horse sense.

The conscientious manager who desires, above all things, to have harmony among his employees and to have a relationship of confidence and understanding with them finds himself hampered at every turn by laws and regulations which he does not know how to apply.

UNTIL the last few years management gave reasonable attention to production of commodities or service and to problems of public relations, as well as to employee relations, but in the last few years employee relations have taken so much time that the company which hires a substantial number of employees needs the constant services of a personnel director and staff to take part of the employee relations work off the shoulders of management.

In addition to wages, the able and conscientious telephone manager has given much thought in recent years, to improving working conditions of his employees. He has provided compensation covering periods of absence due to sickness, accident, or for time needed by employees to take care of personal business. He has provided pensions, vacations with pay, group insurance, and medical attention without cost to the employees. He has more recently arranged for mutual hospitalization benefits. He has organized Cooperative Credit Associations within a group of employees with opportunities for saving, as well as a place to borrow money. He has provided restrooms and recreational fa-

Those who attended the luncheon meeting of the Tennessee Independent Telephone Association in Nashville, during its one-day meeting last month, are pictured here.

cilities for employees. In recent years he has, at heavy expense, installed air-conditioning and indirect lighting in the switchboard rooms and frequently in work shops and offices. He has encouraged safety first programs and improved the type of tools and provided first aid instruction.

These benefits have not been arranged as a substitute for wages. In most cases the actual cost of the benefits, if dispensed with and distributed over a group of employees, would represent only a small amount per month added to their pay, and while it may have been that the cost of providing better working conditions giving these many benefits to employees has resulted in greater efficiency, I challenge any statement to the effect that they were designed by management for the purpose of avoiding the payment of adequate wages.

In my opinion, these things which management has done for the employee have been generally appreciated and have resulted, in most cases, in taking away much of the monotony and drudgery, if such a thing existed, in the daily tasks, but in recent years labor leaders have denounced these employee benefits. Instead of praising management for them the labor leaders often use them as a basis for the statement that management deliberately uses so-called employee benefits for the purpose of avoiding the payment of fair wages. Labor leaders say "Don't let the management pull the wool over your eyes by such claptrap as pensions and sick benefits," and, regardless of how well motivated management may have been in providing these benefits and relaxations for employees, the radical labor leader today is often able to actually do what he has accused management of attempting—that is, to pull the wool over the eyes of the employees.

RECENTLY the War Production Board has encouraged the organization of Labor Management Committees. The purpose underlying this proposal is to increase efficiency and secure greater cooperation between labor and management.

Under the program outlined by the War Production Board each employee is encouraged to offer suggestions for improvement of working conditions, changes in equipment which might increase efficiency, or any suggestion which results in a more efficient production. Discussion of wages is strictly forbidden.

Management is requested to offer rewards for suggestions which result in economy or improved production. Various committees are organized, some of which may devote their time and effort to personnel problems. Entertainments are often planned, particularly during war bond drives, to encourage participation in bond sales. In many cases we are told that these labor-management committees are functioning very successfully. In some cases, however, where unions are strongly entrenched, they oppose the organization of these committees, or, if open opposition is not evidenced, they are reluctant to encourage employee participation in the labor-management plan.

In spite of the desire of management for cooperation, industry and labor seem to be having a difficult time getting along together. Let us take a few minutes then to see whether we can discover the cause of the trouble. The statement that efficiency, loyalty, the desire to be fair and reasonable, and a willingness to cooperate with management on the part of employees have all been subordinated to demands for higher wages and more authority, can hardly be honestly refuted.

It is probably a truism that most of the difficulties arising between management and labor arise from either a lack of understanding or a willful disregard of facts on the part of either or both management and labor, but in hundreds of cases throughout the country management is faced with an attitude on the part of employees which never existed until the last few years, or at least never was apparent.

It would be unreasonable to assume an attitude that management has always been entirely fair with labor. We must admit that certainly a failure of management to recognize the rights of labor to participate in the profits of production, or to provide working conditions which gave full consideration to the welfare of the individual has been the cause of much of the labor legislation and labor dissension of the past decade, but if management was wrong and if management made mistakes, that should not be the basis for going further than to correct these wrongs and mistakes. Today the pendulum has swung so far in the other direction that we are justified in reminding everyone that two wrongs do not make a right.

Fundamentally, labor troubles today arise as a result either of selfish management—and by management I mean not only the executive, but those people who may own or control the operations of an industry—or from the arbitrary demands and methods of unfair and unwise labor leaders. In both cases the result is bad. Oftentimes the trouble is over wages. **The appetite for money, whether for wages, dividends, or profit, needs to be controlled the same as the appetite for food or strong drink.**

EVERY executive who is conscientious in dealing with his employees must recognize the right of the employees to organize, and should be willing, so far as the law will permit, to encourage proper organization. The honest executive should work just as hard for the welfare of his employees as he does for the welfare of his stockholders. If the executive does

(Please turn to page 42)

By SENATOR
ARTHUR E. NELSON

A
MANAGEMENT
ARTICLE
★

The Independent Telephone Company

—*In The Middle of the Squeeze*

Senator Arthur E. Nelson

THE AUTHOR

Senator Nelson is a product of a village of 900 people in Western Minnesota, where he graduated from high school. Continuing his education at the night schools in St. Paul, he was admitted to the Minnesota Bar in 1915, and entered the practice of his profession immediately thereafter, in that city.

In 1920, on his return from an enlistment in the army in the first World War, he was elected by the City Council as Corporation Counsel of the City of St. Paul and won his spurs in the utility field by defeating the street car company before the State Commission and State and Federal courts in its application for an increase in fares.

In 1922, at the age of 29, he was elected Mayor of St. Paul and re-elected in 1924, voluntarily retiring at the end of his second term in 1926 to re-enter the practice of law in that city.

In 1939, he was admitted to the Bar of Illinois and has since maintained law offices in both St. Paul and Chicago, while continuing to reside in St. Paul.

In 1942, he was elected to the United States Senate from Minnesota, for a short term, and served in the Senate two months, at the end of the last session in that year. He was not a candidate for the long term.

For the past 10 years Senator Nelson has represented, in a legal capacity, various operating telephone companies of the Telephone Bond and Share Company group and for the past two years has been particularly active for the Illinois properties in that group in their labor and rate matters.

DURING the past several years, a large number of the industries of America have been squeezed badly—some of them out of existence. This is particularly true of many of the smaller companies operating in this country. This result was to some extent inevitable during the war period but has gone much further than reasonably necessary, due to certain unrealistic policies of the Administration. However, no essential industry which must continue its operations for the successful promotion of the war has been more adversely affected than the Independent telephone industry.

It is recognized that with the Independents serving an area of approximately two-thirds of the United States, they must continue to operate. They cannot fold up. They will be operated, and they must be operated—either under private ownership or by the government. Their elimination as active operating concerns is unthinkable, and from an economic standpoint, impossible.

Notwithstanding these facts, the industry is, and has been for some years, facing constantly increased costs of operation, and its rates have not been generally increased to take care of the added costs. Today, it is facing a real emergency.

While the OPA may have the right to intervene before the various state commissions in any application made by the companies for increased rates, neither the federal government nor the state governments should be required to shoulder all

of the blame for the predicament in which many of the Independent telephone companies find themselves today. Management itself is primarily responsible.

I have made a survey of the operations of the Independent companies in the State of Illinois, as shown by their annual reports for the year 1942. All the reports for 1943 are not yet available. If you will bear with me, I want to give you statistics showing the situation of the Independent companies in this state, and present certain suggestions which may be helpful to the management in the immediate future.

THE Independent telephone industry is fundamentally a small business enterprise. Of 6400 companies in the United States, only 217 have gross revenues exceeding $50,000 per year; 91 per cent of the independently-owned exchanges have less than five hundred stations each. Of approximately five million Independent telephone stations, about one-half are served by Class C and D companies—companies having gross revenues of less than $50,000 annually.

Total book plant investment for the industry is approximately $725,000,000; total annual gross revenues are approximately $200,000,000. And employment is provided for 70,000 people.

Accurate statistics are available for many years covering the operations of Class A and B companies of the country, and, of course, complete data is available for the companies in the Bell System.

In 1942, the Class A and B companies, independently owned, served 2,522,000 stations at 3,951 exchanges, and had a total plant investment of $412,000,000 gross revenues of $97,000,000, operating income of $18,000,000, employed 32,000 people and had a payroll of over $40,000,000. The average wage per employee was about $108..00 per month; the average wage per operator was about $66.00 per month. Generally speaking, it is observed that the employees in these companies are not overpaid under existing conditions.

The reports show that Class A and B companies in the United States earned 4.38 per cent on total book investment during the year 1942, compared to a return of perhaps double that amount for the average major industrial company for the same year, and to an average of 6.9 per cent for the entire 469,000 active corporations in the United States filing their returns.

While the statistics of the larger Independent companies do not make particularly good reading from either a labor point of view or the investment point of view, they are somewhat glamorous compared with the results of the smaller companies. As noted, there are no complete statistics for these small companies, but sufficient "spot" data is available to illustrate.

According to the annual reports filed by all of the Independent telephone companies in Illinois for the year 1942, the facts are as shown across the page:

I have prepared a few charts I want to set up showing the figures on A, B, C and D companies in Illinois separately. You know, of course, that the farm cooperatives are not required to file a return in the State of Illinois, so the Class D,

CHART NO. 1

COMPARISON AND ANALYSIS FROM 1942 REPORTS

ILLINOIS INDEPENDENT TELEPHONE COMPANIES

	CLASS A 14 Companies 343 Exchanges	Average Per Exchange	CLASS B 5 Companies 27 Exchanges	Average Per Exchange	CLASS C 47 Companies 123 Exchanges	Average Per Exchange	CLASS D 170 Companies 191 Exchanges	Average Per Exchange
Capital Investment —per Books	$37,087,567	$108,128	$1,904,800	$70,548	$4,665,015	$37,935	$1,380,977	$7,225
Gross Revenues	$9,125,220	$26,604	$418,379	$15,495	$1,206,423	$9,808	$624,761	$3,271
Operating Expense—Including Depreciation	$6,292,757		$278,685		$934,860			
Taxes	$1,472,179		$59,624		$132,801			
Total Operating Expense and Taxes	$7,764,936	$22,463	$338,309	$12,530	$1,067,661	$8,680		
Available for Interest and Return	$1,360,284	$3,966	$80,070	$2,965	$138,767	$1,128	$29,531	$154
Company Owned Stations	235,089	685	12,115	449	43,805	356	30,205	158
Gross Revenue per Hour of Service	$1,040	$3.03	$47.80	$1.77	$138.00	$1.12		$0.374
Net Revenue per Hour of Service	$155.00	$0.45	$9.15	$0.34	$15.90	$0.13		$0.0177
Gross Revenue per Station	$38.70		$34.50		$27.60		$20.70	
Net Return on Capital Investment—per Books	3.69%		4.20%		2.96%		2.12%	
Per Station Value — per Books	$157.00		$157.00		$107.00		$43.00	

	Class A and B Group	Class C and D Group
Number of Companies	19	217
Stations	247,000	74,000
Exchanges	370	314
Investment per books	39,000,000	6,000,000
Gross Revenues	9,500,000	1,800,000
Operating Income	1,440,000	168,000
Investment per station	158	82
Gross Revenue Per Station	38.70	24.70
Operating Income Per Station	5.83	2.27
Rate of Return	3.7%	2.8%

the lowest group, does not include the farm co-operatives.

The first chart that I want to show you, I do so with my thanks to Jack Crowley, Secretary of the Minnesota Association, who gave me the idea at the Minnesota conveniton.

In the statistics which I just read to you, I consolidated the Class A and B companies, excluding, of course, Bell, and I consolidated the C and D companies. Down at the bottom of this exhibit you will notice the net return to capital investment per books 3.69, Class A companies; and 4.20 in the Class B companies; Class C Companies, 2.96; and the Class D companies 2.12. And you will notice the last line showing per station value per books goes down from $157.00 in the Class A and B companies to $107.00 in Class C and down to an average of $43.00 per station in Class D.

It will be noted that while investment and revenues for the Class A and B companies in Illinois is reasonably comparable with those in the country as a whole, both investment and income are lower, and the operating income, particularly, is substantially lower in Illinois. The balance for return of 3.7 per cent is almost 20 per cent under the national average.

But it is when one looks at the operations of the smaller companies that the picture becomes really distressing. These little exchanges (Class C and D companies in Illinois), have an average investment of only $82.00 per telephone, and in some, the investment is as low as $40.00. Of the 170 Class D Companies in Illinois, serving 191 exchanges and 36,000 telephones, 46 of these companies suffered actual operating loss in 1942, before any allowance whatsoever for return. Gross revenues of these Class D companies totaled only $625,000 or $20.70 a station, including revenues from toll. It appears from the first one hundred reports field by Class D Independents in Illinois for the year 1943 that twenty-four operated in the red that year.

BAD as this situation is, the expectation for the future is due to become rapidly worse, for both the owners and the public, unless rate increases are obtained in substantial amounts. You are all familiar with hearings held by the Wages and Hours Division of the United States Department of Labor relative to increasing the minimum wage required to be paid to operators at exchanges with five hundred or more stations. It is not beyond the realm of possibility that an order will be entered in the immediate future increasing the minimum from thirty to forty cents per hour, or 33⅓ per cent.

In the event that such an order is entered, it will automatically be necessary to increase the wages of the operators at exchanges with less than five hundred stations, which are not covered by the Act. It is obvious that the minimum wage rate of forty cents per hour could not be paid in a community with more than five hundred stations and at the same time expect that the wages can be held down in a community seven or eight or twenty miles away, with two or three or four hundred stations at the exchange, or four hundred ninety stations.

It is doubtful if at the present time, on the basis of the annual reports filed by the Illinois Independents, more than an average of thirty-two cents per hour is paid to operators in the exchanges having more than five hundred stations, while at the exchanges with less than five hundred stations, the average pay for operators does not exceed twenty cents per hour, according to a report made by the Illinois State Department of Labor last year.

Increases necessary to bring the wages up to a minimum of forty cents per hour at the exchanges with more than five hundred stations will mean perhaps ten cents an hour added operator costs. While not subject to the Wages and Hours Act, the exchanges under five hundred are even more vulnerable from a competitive point of view, and it is likely that increases of ten cents in the larger exchanges will necessitate at least equal or perhaps greater increases at the small exchanges, in order to hold the operators on the job.

For the United States as a whole, the ratio of operators per station is a relatively fixed quantity and, applying the same ratio in Illinois, it is found that about 1750 operators would be required for the Class A and B Independent companies and about 520 for the Class C and D companies. Assuming only ten cents per hour increase for two thousand hours a year, the cost to the Class A and B companies would be $350,000, or 25 per cent of their 1942 operating income. Increased differentials will add considerably to this additional operator cost.

IN the case of the Class C and D companies, ten cents per hour for two thousand hours a year would amount to $104,000—and would wipe out two-thirds of the already pitifully small amount available for interest and return.

Actually, these estimates are probably far too conservative, since it is clear that in the smaller exchanges, at least, the average operator must work more than two thousand hours per year. For example, assuming twenty-four hour coverage of a given board and only one operator even for the peak loads, and no relief

(Please turn to page 54)

MAXIMUM AND MINIMUM PER STATION RATES

OF INDEPENDENT TELEPHONE COMPANIES IN ILLINOIS

STATIONS		BUSINESS			RESIDENCE			
		INDIVIDUAL LINE	2 PARTY LINE	RURAL	INDIVIDUAL LINE	2 PARTY LINE	4 PARTY LINE	RURAL
250 OR LESS	TOP	$3.75	$3.50	$3.00	$2.75	$2.50	$2.25	$2.25
	BOTTOM	1.50	1.50	1.33	1.50	1.25	1.00	1.25
251-500	TOP	4.00	3.75	3.00	2.75	2.50	2.25	2.25
	BOTTOM	1.66-⅔	1.50	1.50	1.50	1.33-⅓	1.25	1.50
501-750	TOP	4.25	3.75	3.00	3.00	2.75	2.50	2.25
	BOTTOM	1.66-⅔	1.50	1.50	1.25	1.33-⅓	1.50	1.50
751-1000	TOP	4.50	4.00	3.00	3.25	3.00	2.50	2.50
	BOTTOM	2.25	2.00	1.50	1.75	1.25	1.25	1.50
1001-2000	TOP	5.00	4.50	3.50	3.50	3.25	2.50	2.50
	BOTTOM	2.50	2.00	1.50	1.75	1.50	1.00	1.50
2001-4000	TOP	4.50	3.75	3.00	3.00	2.50	2.25	2.00
	BOTTOM	3.75	3.00	2.50	2.50	2.00	1.60	1.75
4001-5000	TOP	6.00	5.00	3.00	3.75	3.25	2.75	2.50
	BOTTOM	4.00	3.50	2.25	2.50	2.50	1.75	1.75

Maximum switching charge $1.00 per month.

Telephone Engineer's TRAINING COURSE

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ELECTRICAL FUNDAMENTALS FOR THE TELEPHONE MAN

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Part XII---Direct Current Ammeters and Voltmeters

General

ANY instrument designed to measure current is referred to under the general term of **ammeter.** This includes microammeters, milliammeters, and ammeters. Likewise, voltage measuring instruments are referred to as **voltmeters,** although the term includes both voltmeters and millivoltmeters. Ammeters, because they measure current flow, must be so designed that they may be inserted in **series** in a circuit, while voltmeters must be designed to permit placing them **in parallel** with the circuit. Ammeters are inherently low resistance and voltmeters high resistance instruments. Basically, however, they may and often do employ moving coils of identically the same characteristics.

Difference Between Ammeters and Voltmeters

THE principal difference between ammeters and voltmeters is in their series resistance. Ammeters must have a very low resistance inasmuch as they are inserted in series with the circuit. If their resistance was appreciable there would be a voltage drop ($E = IR$) across the meter, and the current flowing with the meter out of the circuit would be greater than when it was in the circuit, hence, the requirement that they be of low resistance.

The resistance of typical ammeters ranges from .075 ohms for a 1 ampere meter to .0015 ohms for a 50 ampere meter. The resistance of milliammeters range from 7.0 ohms for a 10 milliampere meter to 0.15 ohm for a 500 milliampere meter. Microammeters have resistances of from 50 to 100 ohms for 200 to 500 microampere meters.

It will be noted that the resistance of an ammeter decreases as the range amperes increases. This is necessary to avoid the excessive voltage drop which for a given resistance would increase directly with the current. In making accurate measurements with an ammeter the error due to the voltage drop across the meter can easily be computed by multiplying the resistance of the meter by the current passing through it. For example, the drop across a milliammeter having a resistance of 2.0 ohms and with 50 milliamperes flowing through it would be ($E = IR$) or $E = 2.0 \times 0.05 = 0.1$ volt.

Voltmeters, unlike ammeters, must have fairly high resistances in order to limit the current drawn by the meter when it is placed across a voltage source. The current in amperes which will flow through the meter will, according to Ohm's Law, equal volts divided by ohms, hence the higher the voltage range of the instrument, the greater resistance it must have.

For voltage measurements on direct current sources or on circuits having low resistance, voltmeters having relatively low resistances may be used without introducing any error in the measurement due to the current taken by the meter. Examples of low resistance sources are: Storage batteries, dry cells, etc.

Error Due to Low Resistance Meter

VOLTAGE measurements on circuits or potential sources of relatively high resistance require that the voltmeter have a high resistance, hence draws very little current from the source for its operation. Examples of high resistance voltage sources are radio power supply units, most telephone circuits, ringing machines, etc. Typical of the errors that result from the use of a low resistance circuit is that shown in Figure 9.

The resistance of a voltmeter is usually referred to in terms of the number of "ohms per volt." That is, a 10 volt meter with a resistance of 100 ohms per volt would have a total resistance of 1000 ohms.

The direct current voltmeters commonly used in connection with mea-

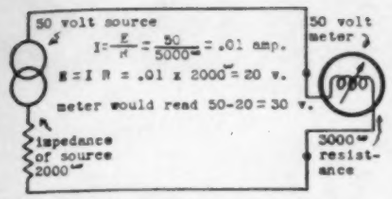
50 volt source
I = E/R = 50/5000 = .01 amp.
E = I R = .01 x 2000 = 20 v.
meter would read 50-20 = 30 v.
impedance of source 2000
50 volt meter
3000 resistance

Fig. 9.—Effect of Meter Resistance on Accuracy of Reading.

surements on low resistance sources or circuits, have resistances of approximately 100 ohms per volt.

Voltmeters suitable for measurements on high resistance circuits such as are encountered in connection with radio and telephone work are designed to have a resistance of at least 1000 ohms per volt. The current required for full scale operation of such a meter is only one milliampere, hence introduces only a small drop in voltage in the internal resistance of the source or circuit being measured. Voltmeters are available with resistances as high as 25,000 ohms per volt.

Incorrect Use of Voltmeters and Ammeters

IN using electrical measuring instruments, one of the first things to learn is to **never connect an ammeter across the circuit or source being measured.** Failure to observe this precaution may result in an expensive instrument being burned out. As previously explained, ammeters are very low resistance instruments and must always be connected in series with the circuit under measurement. Figure 10 illustrates what would happen if a 500 milliampere meter were connected across a six volt storage battery. Over 30 amperes would flow through the meter and it would be burned out.

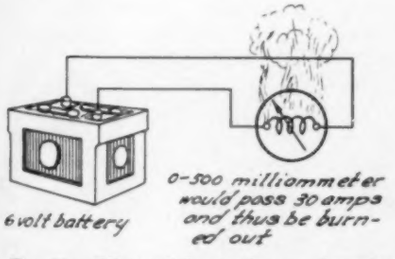

Fig. 10.—Effect of Connecting an Ammeter in parallel rather than in series with a Circuit.

Before inserting an ammeter in a circuit, care should be taken to see that the equipment under measurement cannot become shorted as this would impose a severe overload on the ammeter and would be equivalent to connecting it directly across the circuit.

Fig. 10-1 shows the correct connection for ammeters and voltmeters.

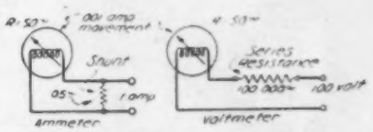

Fig. 10-1.—Correct Connection for Ammeters and Voltmeters.

Voltmeters are less subject to damage than ammeters and if accidently placed in series with a circuit, no damage to the instrument will result. However, the high resistance of the instrument will usually prevent the normal operation of the circuit due to the greatly reduced current flow. A typical milliammeter of modern design is shown in Figure 11.

Fig. 11.—Well Designed Modern D.C. Milliammeter.

Figure 12 illustrates what would happen if a 10,000 ohm volt meter was placed in series with a 110 volt circuit with a connected load of 5 amperes.

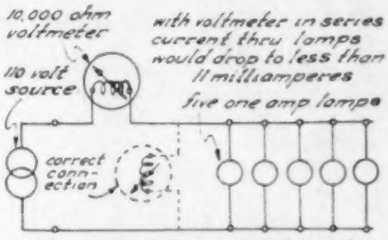
10,000 ohm voltmeter
110 volt source
with voltmeter in series current thru lamps would drop to less than 11 milliamperes
five one amp lamps
correct connection

Fig. 12.—Effect of Incorrect Connection of Voltmeter in Circuit.

Direct Current Ammeter Design

THE D'Arsonval movement used in ammeters and voltmeters is very sensitive and requires only a few milliamperes or less of current to give full scale deflection. In order that a standard type of moving coil may be used in ammeters of both low and high range, recourse is made to the use of **resistance shunts** which are designed so that a portion of the current flowing to the moving coil is by-passed through the **shunt** which is connected directly across the moving coil.

The ratio of the resistance of the shunt to that of the moving coil is such that a definite and usually small proportion of the current being measured passes through the moving coil but the ammeter scale is calibrated to show the total current flowing through the coil and shunt and not merely the current flowing through the moving coil.

It should be noted that the resistance of the shunt is found by dividing the product of moving coil current and resistance by the current that the shunt must carry.

Figure 13 illustrates the principle of the ammeter shunt as applied to a particular type of meter.

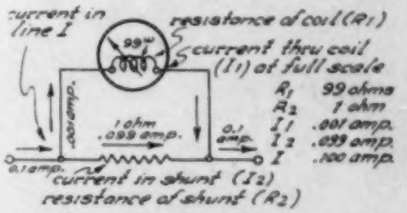

Fig. 13.—Relationship of Current and Resistance in a Meter Shunt

The larger the amount of current to be measured, the lower the resistance and the greater current carrying capacity a shunt must have. Shunts such as are used to carry 15 amperes or greater are usually of a type having heavy copper terminals and with the resistance material consisting of strips of manganin rather than wire.

Design Basis

IN designing shunts for ammeters, it is the practice of some of the instrument manufacturers to design the shunt so that the drop in voltage across its terminals will be 50 millivolts when carrying the desired maximum current and to use a moving coil which will give full scale deflection on 50 millivolts. This practice facilitates the associating of a standard type of moving coil instrument with a number of shunts to cover different ranges. For example, a shunt designed to give a range of 100 amperes would have a resistance of .0005 of an ohm, therefore 100 amperes flowing through the shunt would result in a drop of potential of 0.05 volts which would produce full scale deflection when used with a 50 millivolt movement.

When designing shunts for use with existing ammeters or milliammeters one must of course determine the resistance of the moving coil movement and then adjust the resistance of the shunt so that the measured current will divide in the proper proportion to produce full scale deflection, at the desired maximum current.

In connection with switchboard instruments employing shunts mounted external to the meter and using paired wire between meter and the shunt, it is important that the same lead wires

employed in the calibration of the instrument be used. Even a small resistance variation in the lead wires would appreciably affect the calibration of the meter inasmuch as the meter requires only 50 millivolts for full scale deflection.

Moving Coil Resistance

THE resistance of moving coils used in ammeters (particularly the older types) are usually lower than that of moving coils used in voltmeters. The reason being, as previously pointed out, that it is desirable to keep the resistance of an ammeter as low as possible so that it may be inserted in a circuit without affecting the conditions in that circuit. It is therefore necessary that the resistance of the moving coil be sufficiently low so that the current will divide between it and the shunt in the proper proportions. The resistance of the coils used in high grade ammeters is usually between 1 and 2 ohms whereas the resistance of the moving coils in a good many voltmeters is as much as 70 ohms.

Design of Ammeters Shunts

THE design of shunts for Direct current ammeters and particularly milliammeters is a relatively simple process and anyone working with electrical instruments should have a good understanding of the procedure. In practical work cases often arise where meters are available but of the wrong range and it is desired to change the range to one that fits a particular need. The following items illustrate the steps to be followed in designing shunts to fit a given condition.

Step 1—Remove the case from the meter (either voltmeter or ammeter) whose range it is desired to change and measure the resistance of the moving coil with a Wheatstone Bridge or Ohmmeter. In making this measurement it is necessary that any shunting or series resistance that may be across the moving coil be disconnected. If the moving coil is of a low current type it will be necessary to insert a resistance in the battery circuit of the Wheatstone Bridge or Ohmmeter in order to limit the current flowing through the moving coil under measurement. When a resistance is inserted in series with an ohmmeter the value of the resistance must be subtracted from the total resistance to get the coil resistance. Call the resistance of the moving coil (R1).

Step 2—Using a 1½ volt dry cell and 1000 ohm variable resistor connected in series with a D. C. milliammeter and the moving coil of the instrument to be calibrated, adjust the resistor to give full scale deflection of the moving coil under measurement and note the current taken to produce this deflection as indicated by the other milliammeter. Call this reading (I_1).

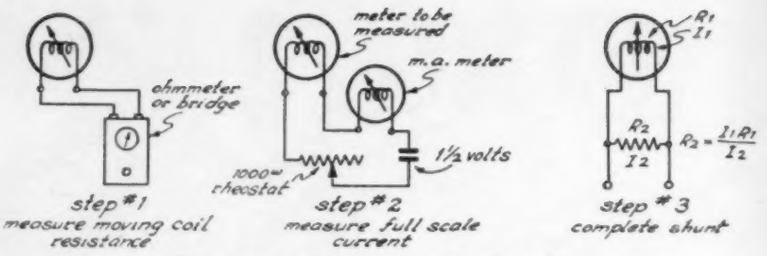

Figure 15.—Several Steps in Shunting a Meter

Step 3—Using the following equation determine the resistance of the shunt required to produce the required range.

$$R_2 = \frac{I_1 R_1}{I_2}$$

Where: R_2 = Resistance of shunt
R_1 = Resistance of moving coil
I_1 = Current through coil
I_2 = Current through shunt
(I_2 = Line current minus meter current)

Step 4—Using special **zero temperature coefficient wire** make up a shunt of the proper resistance as found by the equation above. If an accurate meter is available it is usually desirable to cut the shunt so as to have a slightly higher resistance than computed and to then adjust the shunt to give the desired reading on the ammeter under calibration as indicated on a second calibrated meter which is placed in series with the meter for which the shunt is designed. Figure 15 illustrates the several steps in designing a shunt for a particular case.

Note: Zero temperature coefficient wire is a wire whose resistance does not change with change in temperature.

It is a relatively easy matter to design shunts for milliammeters and low range ammeters, however larger capacity shunts require the use of a flat resistance strip in order to properly radiate the heat generated and it is rather difficult to make homemade shunts of this type.

Scale Calibration

AFTER a shunt is designed to fit a given meter for a specified range, the scale calibration must be worked out. There are several ways of doing this. Scales used with D'Arsonval type instruments are inherently linear; i.e., the divisions are equally spaced between the two limits of the indicator needle travel. If the existing scale is not suitable, a new scale may be substituted. In the case of instruments using a printed scale on bristol board, a new scale may be substituted with the limits laid out the same as the existing scale and with the intermediate divisions marked in with mechanical drawing instruments to fit the desired range. Where it is desired to use the existing scale, the current per scale division can be determined by dividing the maximum current rating of the meter by the number of scale divisions and thus obtaining a multiplying factor.

The Ring Type Shunt

THE preceding paragraphs have described the design of shunts for ammeters. Where a single shunt is required the design data given will work out nicely, however, if it is desired to work out a system of shunts so that a single instrument can be used on several different current ranges, with any range selected by a switch, the simple shunt design procedure has a serious fault.

The objection to the simple shunt lies in the fact that the switch or rotary contact used to select the different ranges may offer a slight resistance at its contacts and this can, under some circumstances, cause considerable error. Referring to Figure 16-1, which shows the several shunts in a two range meter, it will be observed that any resistance which may

(Please turn to page 61)

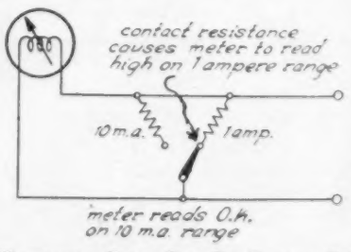

Fig. 16-1.—Error Due To Contact Resistance on Multi-range Milliammeter with Simple Shunt Design.

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by

ROLAND C. DAVIES
Editor, Telecommunications Reports

UNTIL the projected invasion of Western Europe is launched by the United Nations armies with the United States and British forces by far the largest components of the onslaught, affairs in Washington not only are somewhat in the doldrums, but also seem most meaningless in contemplation of this impending military offensive.

The communications aspects of any invasion operations would follow, it is felt, the pattern of the amphibious attacks which have been made in the Mediterranean and North African theatres. Radio would be the initial communications "weapon" during the landings. But telephone is established as soon as feasible—first, with light, fragile assault wire and then with regular field wire and a message center, using telephone and teletype services, being set up for the command headquarters. The Signal Corps has two teams in any invasion operations—radio and telephone. The telephone team, besides the establishment of the assault network of lines and later the field wire systems, has a major job the taking over of the local telephone plants of the nearest towns.

Of course, this pattern of taking over the local telephone plants is presaged upon the assumption that the Nazis would not wholly destroy it. The Army, however, has been planning for the destruction of telephone facilities by the enemy and an exhaustive statistical study of telephone requirements in Western Europe, both for military and emergency civilian uses, has been consummated. The telephone equipment needs for any emergency situation for rehabilitation of civilian service in any areas of occupied Europe have already been contracted for by the Signal Corps and have been manufactured—the Independent telephone manufacturing companies have played a most constructive and excellent role in the providing of this apparatus.

On the Wasington front there are four pending developments that will be of significance for the telephone industry when they materialize into full fruitition.

At the USITA Executives Conference last month our camera caught Loren M. Berry and George Northington, of Ohio and John E. Sexton of Bristol, Va.

Significant Developments

These are:

1. Retirement of Commissioner T. A. M. Craven from FCC to return to private engineering consultation work. Commissioner Craven is not seeking reappointment because he wishes to return to private engineering practice after his thirty years of Navy service and career with the old Radio Commission and FCC as chief engineer and commissioner. His successor to take over the post after July 1 will probably be named by President Roosevelt during June—possibly even during the latter part of May because of the prospective recess of Congress during the political conventions. Because Commissioner Craven is listed as a Democrat, the President, it is speculated in certain quarters, might appoint a "lame duck" member of Congress. In order to avoid political repercussions it is considered somewhat doubtful that Mr. Roosevelt would name to the FCC—an agency which has been under a terrific amount of fire from Congress—a left-wing New Dealer.

2. Revision of the Emergency Price Control Act—Congress is now studying the revision of the OPA's powers in connection with the legislation to continue the authority of the governmental price control agency. So far there has been no disposition to change the present language in the Price Control law concerning the OPA's powers over proposed utility rate increases, and the outlook is that this provision of the Price Control Act will remain as at present. However, there are pending two important tests of the OPA's authority in this field on telephone rates in Illinois and Ohio and the conduct and outcome of these proceedings by the OPA staff might have a bearing on whether or not the law will be revised with respect to these powers.

3. While the domestic telephone industry, particularly the Independent branch of it, is not directly affected by the outcome, the consideration of the international communications situation and the proposal for a merger of the American international communicaticns companies may have some most significant repercussions in the way of future governmental policies and trends. If an international communications merger is established with government control or financial ownership, such a step—and the temper of Congress is now conceded to be opposed to it—would have a most important bearing on the future trends in the operations of the domestic telephone and telegraph industries. (Detailed summary

of Senate study of international communications merger later in this column.)

4. The first round has been fought in the courts on the FCC's powers over the extra charges by hotels, clubs and apartment houses placed upon long distance telephone calls. In a somewhat partial victory the FCC won a permanent injunction against hotels in Washington which prohibits the latter from adding surcharges to the regular long distance telephone rates on calls by their guests. This principle may be an important prevailing factor in deciding other court tests of the FCC powers to ban surcharges on long distance calls—the two other pending charges are to be tried before Federal courts in New York and Chicago during the early part of June. There is another court test which will be tried later in Washington and which is of much greater importance than that dealing with long distance service to the Independent industry—it is the appeal of the Hotel Association of Washington from the decision of the District of Columbia Public Utilities Commission which like the FCC prohibited surcharges for local exchange calls by hotel guests. In winning its injunction on its prohibition against long distance surcharges by hotels, the FCC lost on several points under the Federal judge's rulings. The judge rejected the idea of the FCC that hotels were agents of the telephone companies and could be regulated by a Commission and held that hotels were like any other subscriber. Telephone companies also could not be enjoined from rendering service even if the hotels violated their tariffs, filed in conformity with the FCC's ban on long distance surcharges, the judge also decided. (Further analysis of hotel extra charges for telephone service proceedings is carried in another portion of this column.)

* * * * *

International Merger Plan

A SERIES of informal executive conferences on the subject of international communications policies for the United States in the postwar period and the proposal of a merger program for the American international communications companies was launched by the new five-member Subcommittee of the Senate Interstate Commerce Committee during the latter part of May.

The appointment of the Subcommittee was announced by Senator Wheeler of Montana who assumed its chairmanship, together with the chairmanship of the full Interstate Commerce Committee. The other members of the Subcommittee, named by Senator Wheeler, were Sentor Wallace H. White, Jr., Maine Republican and Senate Minority Leader who is regarded as the leading authority in Congress on communications matters; Senator Lister Hill (D. Ala.), Majority Whip; Senator Ernest McFarland (D. Ariz.); and Senator Warren Austin (R. Vt.), Senators White, Wheeler, and McFarland are authors of the resolution (S. Res. 187) directing the investigation of international communications.

For the next month or two the international communications Subcommittee will busy itself in securing background information and views of responsible government experts, Senator Wheeler indicated, adding that his body already has assembled considerable interesting data. Much of this, he felt, would be of a confidential nature due to military or diplomatic necessity. These conferences, according to the plan, would be followed by interviews with representatives of the international communications carriers, including executives of the American Telephone & Telegraph Co. which operates the nation's overseas radiotelephone circuits. Then, based either on a committee report or on a preliminary legislative draft, the Subcommittee would hold formal public hearings.

The membership of the Subcommittee makes it a very strong and well-qualified Senate group to survey this important and highly complicated subject of international communications and the issue of an international communications merger. Four of the Subcommittee members, with the exception of Senator Wheeler, served on the Senate body which handled the legislation that led to the domestic Western Union merger and the international communications aspects were given considerable attention in these hearings. Chairman Wheeler, of course, followed the subject closely at that time as head of the Interstate Commerce Committee. Senator Hill is close to the Administration by virtue of his position as Whip. Senator McFarland ably headed the Domestic Merger subscommittee; Senator White has served as American chairman and delegate at every recent major international communications conference and Senator Austin is regarded as one of the ablest lawyers and students of foreign relations in the Senate.

None of these Senators is up for reelection next November, except Senator Hill, who has just won the Democratic renomination in his state, which is tantamount to reelection in Alabama. Thus, none of them will be occupied with personal election campaign affairs during the coming summer and fall which should mean they can devote much interest to the important international communications subject. Furthermore, all five Senators are men of very high calibre and interested in the nation's fundamental policies.

Wheeler's Views on Merger

IN making the announcement of the Subcommittee, Senator Wheeler issued a lengthy statement in which he summed up certain of his ideas on international communications and the proposal of a merger of the American international communications companies. But he emphasized that he had no preconceived ideas on what the final answer will be. A merger "may be the answer—or a partial answer, but we'll see" he commented.

Stressing that international communications is a bigger and far more vital matter than most people suspect in the postwar world, Senator Wheeler urged that a clearer and more definite American policy is needed before the end of the war to "make our communications sovereign" in terms of national interest. He felt that the rate differentials which exist between the American press and the British Empire press and the case of rate discriminations against the American business interests in relation

(Please turn to page 66)

Convention Dates

Pennsylvania Independent Telephone Association, Berkshire Hotel, Reading, May 17 and 18.

New York State Telephone Association, Hotel Syracuse, Syracuse, May 24 and 25.

Washington and Oregon Independent Telephone Associations, joint convention, Columbia Gorge Hotel, Hood River, June 23 and 24.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 10, 11 and 12.

Missouri Telephone Association, Place not decided, November 21 and 22.

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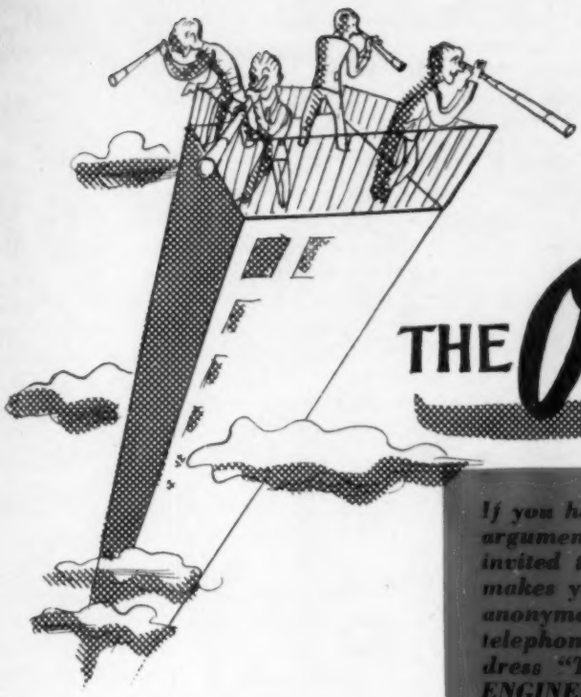

Conducted by the
Observer and his Gang

THE Observation Tower

If you have observations or even a friendly bit of argument suitable for use in this column, you are invited to send them along, which automatically makes you a member of the Gang. You will be anonymous—no names of telephone people or telephone companies are used in the column. Address "The Observer", in care of TELEPHONE ENGINEER AND MANAGEMENT.

Wartime Public Relations

ONE of our Gangsters remarks that he hears a lot of talk about the maintenance of telephone plant in wartime, but why doesn't somebody say a few words on another important maintenance job—the maintenance of wartime public relations?

Just to be accommodating, we'll say the few words ourselves—by telling the following story:

A business man stood in a long line before the registration desk of a hotel, waiting his turn to register for a room. He listened with interest as the hotel clerk curtly turned down most of the applicants ahead of him. Finally he stepped out of the line, picked up his baggage, and started to leave the hotel.

An assistant manager stopped him and asked if he could be of any help.

"No", said the business man. "I've decided I don't want a room; in fact, I'm taking the next train home. As I stood there in line it occurred to me that if the people in my organization are talking to our would-be customers like your clerk is talking to your would-be guests, I probably won't have any business after this war's over. I'm going home to find out."

Perhaps there's no moral in this tale for telephone companies. They're usually pretty good at public relations. But there are some businesses in this country that will have to fight hard in the days of stiff competition after the war, to overcome the handicap they are putting on themselves by the rough way they are treating their customers now.

People have long memories, and most of us remember the things that made us sore longer than we do the things that pleased us.

How Often Do You Turn Over?

A GANG Member who has been making some figures about his business asks us if his turnover of telephones in service is out of the ordinary. Our statistics hound No. 7 took this member's figures and compared them with those of a number of other companies and he reports that there's nothing unusual in this member's situation.

It seems to be a fact, reports No. 7, that on the average in normal years, around 21% to 23% of the number of telephones in service at the beginning of a year are taken out for one reason or another during the year. He says, however, that his dope shows that the normal percentage has dropped during the war—people are hanging on to the telephones now.

Of course a lot of telephones are installed during the year. In the immediate prewar years, when most telephone companies were gaining subscribers, the normal percentage of installations ran on the average around 27% of the number of stations in service at the beginning of the year.

There have been years, he says, when telephone companies have handled through both installs and removals in a year, more than half the number of telephones they had in service at the beginning of the year.

Of course normal averages are all out of kilter now, when installations must be made in accordance with W.P.B. orders and, as stated, subscribers are hanging on to their telephones now when they might have them removed if they knew they could have another one installed without delay at any time.

Statistics Don't Lie?

OF course the foregoing figures on telephone turnover do not mean exactly that there is an entirely new set of subscribers at a telephone exchange every five years or so. On the contrary, a very large number of subscribers keep their telephones year after year, for many years.

The figures simply mean that there is a larger percentage of telephone subscribers who are "in and out" because their situations change, they move to some other locality, they close their business, and so on.

Which reminds us that while it is said that accurately compiled statistics, like photographs, do not lie, we believe they both can at times give a wrong impression.

Like the story of the town in Alaska where there were 100 marriageable men and just one unattached lady. She

picked out one of the men and married him, and the statistically minded editor of the local newspaper headlined the event: "One percent of the men here marry 100% of the women!"

More About Hobbies

SPEAKING of the hobbies of telephone men and women, as we did last month, Gang Member 131 writes that he wouldn't give a rap for Shakespearian study or bee-keeping, like the guys we told about—but he's on the beam as to Philatelics (stamp collecting to you). Gangster 131 says he has a collection of more than 30,000 uncancelled United States stamps. He wants our spy X-41 to see whether any other telephone man or lady can come anywhere near that.

X-41 is out snooping on the proposition now, but if you know any telephone person who can top 131, shoot us the dope.

Meanwhile X-41 has found a telephone man whose hobby is cooking fancy dishes. Also, another who invents and manufactures fishing tackle on the side. (Making a good thing out of it, too, says X-41 enviously).

What's **your** hobby?

Consider the Source

STOP reading if you've heard this one: A certain insane asylum is out in the country and receives its outside telephone service from a small-town exchange nearby. One day a very snooty and self-important trustee of the institution was visiting it and had occasion to use the telephone.

The gentlemen became highly dissatisfied with the telephone service he was receiving, and bellowed at the operator, "Young woman, do you know who I am?"

"No", replied the unperturbed operator, "I don't know who you are. But I sure know where you are!"

Guest Editorial

By FRANK L. McKINNEY

One day our boys will come marching home. The bands will play and the streets will be lined with cheering thousands. Tons and tons of confetti will be tossed down the necks of our heroes, who, during a hectic week or two, will be honored guests at countless community festivals, U.S.O. dances, clam bakes, and wild parties.

Their backs are going to be patted until they hurt; their egos fed with laudatory resolutions and loving recitations by civilian gauleiters; their hands wrung by myriad admiring friends; and their helmets filled with cigars, cigarettes, and pint bottles, by semi and wholly inebriated enthusiasts.

If current proposals by alert politicians are adopted, it is likewise possible that the pockets of their worn uniforms will be stuffed with bills of the smaller denominations, and they will be given reconstruction ration books, as well as nonnegotiable credits, supposedly good at some future date in connection with old age or invalid retirement.

The rotogravure sections will be full of their pictures, general officers being lavishly decorated with floral horseshoes and halos, and the noncoms and privates being shown tightly clasped in the arms of second rate actresses, federal building stenographers and passing scrub women.

Undoubtedly the lads are going to receive a hell of a noisy and well publicized welcome—to which their individual secret and wholly sincere reaction will be, "Aw, Nuts! Let me out of this jam long enough to get back into a blue serge suit!"

Fact is, these strong young warriors already know what they want from their homeland, and, to the mind of the writer at least, their claims are reasonable and subject to AAAA1 priority.

First of all, they want jobs, berths in civilian life that will permit them to turn their furious energies to the task of upbuilding America, and in which the feathering of private nests for themselves will follow as a matter of course. From the camps, the battlefields, the jungles, and the salt water ports of call, comes a single message, "Remember! You Back Home! We want jobs!"

The above message isn't a supplication, an appeal or a request. It's an order. Its fulfillment represents another big task for the country, but it comes as the logical aftermath of the business of making war, and it calls for a reversal of the process by which our young men were siphoned into the armed services. Applying the intelligence that God gave us, one-half as well to the cause of peace as we are presently applying it to the art of war, we will fit these men into useful jobs at fair pay, and without passing through a new period of turmoil and confusion.

Master plans for the re-employment of the returning legions can be had for a dime a dozen. Every newspaper and magazine is filled with them. Sad to relate, a great many of them, backed by big names, are mostly wind, air and malarkey; the product of theorists, dreamers, and Marxian ideologists; booby traps that the soldier will reject with a curse.

Successful placement of our fighting men in proper jobs will result from no single master plan, but will grow out of some tens of thousands of blueprints for the future, prepared by as many big and little industries. The present moment is none too soon for all of us in the telephone field to put the finishing touches to our own programs.

Happily for the telephone industry, our re-employment picture has some very bright spots. We have on hand millions of dollars that can be used only for deferred maintenance and for the replacement and extension of plant. The Signal Corps is a golden treasury of experienced and disciplined manpower, sound in physique and philosophy, into which we can dip freely for the organization of permanent civilian telephone battalions, that will be qualified to perform a masterly job for several decades to come.

Speed up your own post war program. Plan to employ more highly skilled men than has been your practice in the past, when you were limited in personnel by a nation wide scarcity of telephone technicians. For a short time after the war ends, you will be able to pick up the cream of the army's well trained crop of Signalmen, and will have the first opportunity in all telephone history to fortify the industry with ready trained, willing and enthusiastic young blood. Pick up as many of these chaps as you can use for both the short term and the long term. Grab off promising understudies for those aging department heads. Some day you'll need them like a gun in Texas. They won't be available too long.

Where it is possible to do so, give a few of the boys in the armed services, the immense satisfaction of knowing that you have a job waiting for them when they return. Short of a bear hug from mother in person, nothing stiffens a uniformed man's morale, like a letter on company stationery, advising him that a job,—a man's size job,—is being reserved for him when he gets back into a blue serge suit.

at Home—

nds at the Front

nd women long skilled in pro-
are busy making apparatus

lly skilled in communication
rt enemy movement, to direct
ounter-attack.

duction of this essential equip-
orking tirelessly at the equally
erating at high efficiency. To
o they are doing, we offer
transmission, rebuilding, and
t with our representative, or

Photo by U. S. Army Signal Corps

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Employee Relations

(Continued from page 28)

do this, is he not then entitled to the same cooperative effort on the part of the employees?

It is not the purpose of this article to attack organized labor or to issue a tirade against radical labor leaders. We repeat that it is our desire merely to look the present situation in America squarely in the face and try, if possible, to analyze it in the hope that both management and labor can find a common platform upon which they can stand which gives fair consideration to the owners who provide the capital for creating the business, to the employees whose common effort keeps the wheels of industry greased and turning, and to the customers of the business who must buy its service.

It has become rather common practice among radical labor leaders, as they organize and obtain control of labor groups, to immediately launch a program of vilification against the management. There is no law which prevents the labor leader from deliberate and malicious attempts to build up bitterness and resentment between the employee and management. He can make any charges he wishes, whether true or false, against the employer who cannot indulge in the same practice himself. The National Labor Relations Act protects the employee and his labor representative in any sort of slanderous program against the employer, but the employer finds his hands absolutely tied in meeting these attacks.

True, the U. S. Supreme Court recently decided in the Virginia Electric and Power case that, under the provisions of the National Labor Relations Act, the employer is entitled to talk to his employees, provided that nothing he says shall be for the purpose of, or result in, coercion or influencing the employees in the matter of their joining any union or influencing them on behalf of one union against another union. What is management then to do in the matter of employee relations if his employees are organized and represented by one of these so-called radical labor leaders or an ambitious labor lawyer? First of all, management should certainly scrutinize its own practices and analyze its own motives. If management has been unfair and selfish in its policies and practices, the old adage that "Charity begins at home" should be applied to the application of fairness in dealings with its employees. Certainly management has the right to present to its employees the facts which are the basis for decisions. If these facts are honestly presented and the employees are willing to do their own independent thinking, there should be little difficulty in arriving at a proper solution to all problems. It is, therefore, important that management shall be honest and fair in the presentation of its facts. Misunderstandings should be prevented, or removed, by everyone looking the facts squarely in the face.

ON the employees' side, then, it becomes equally important that they select honest and fair leaders for their own group.

A guide for establishing fundamentals for good employee relations might be considered into the following general rules:

Management should give all consideration to:

1. Payment of adequate and satisfactory wages. (Bonuses or profit sharing plans do not fit easily into the utility field where rates are subject to regulation but are worth considering.)
2. Establishment of pleasant working conditions and broad plan of employee benefits.
3. Willingness to give every employee equal opportunity for advancement or promotion according to his skill and ability, with honest consideration for length of service in considering promotions.
4. A guarantee of permanent employment with such reasonable increases in pay as the business of the employer permits.
5. Willingness, at all times, to consider suggestions for improvement of production and service, as well as suggestions for improvement of working conditions.

Employees should give full consideration to:

1. A willingness to cooperate with management.
2. A genuine desire to render a fair day's work for a fair day's pay.
3. A recognition of the fact that the employer's three-fold obligation, to the employee, to the public, and to the owners of the business, should likewise be a three-fold obligation of the employee, to the employer, to the public, and to the owners of the business.

   Too often the labor leader, particularly if he is paid for his services to the union, has no interest except to continually increase wages in order that he may justify his employment. The paid labor leader frequently states that he doesn't care whether a company pays dividends—that is not his business—and he has no particular interest in the matter of production or services rendered to the public.
4. Analyze honestly the ability of management to pay higher and higher wages. Sincere, loyal employees are usually anxious to read the financial reports of the company and to give fair consideration to the reasonableness of requests for more pay.

Left to right, H. L. Frentress, general commercial manager Northwestern Bell, Omaha; J. H. Agee, vice president and general manager Lincoln Tel. & Tel. Co., Lincoln; De Loss Walker, Chicago; and H. C. Leinard, assistant to vice president American Tel. & Tel. Co., Cleveland, were found chatting between sessions at the recent Nebraska convention.

but here again too often the radical labor leader dominates the situation and attempts to stir up strife when there is actually no just grounds for dispute.

In conclusion, satisfactory and pleasant employee relations will exist as soon as management and labor recognize their partnership. Neither can prosper without the other and far better results are gained by unselfish cooperation on the part of both.

MR. Eric A. Johnston, president of the Chamber of Commerce of the United States, delivered an address March 13, 1944, at the Founders Day dinner of Boston University. This address was called "A Warning to Labor and to Management." It can well be studied by both, for Mr. Johnston didn't hesitate to point out the wrong doings of both sides, but he concluded his speech by saying that labor and management must work together in appealing for a pact of non aggression and mutual assistance between management and labor. He said, "You can't get rid of management and you can't get rid of unionism in a free country." Both are social economic facts, but he calls for equal treatment of labor by management and management by labor. We recommend that you get a copy of this address and read it.

If both labor and business are to prosper, it must be the result of unselfish, fair-minded, honest treatment by both sides. Let's try a little more of The Golden Rule.

— END —

W. A. Hughes in Important Army Assignment

William A. Hughes, operating vice-president of the Indiana Bell Telephone Co., has been given an important assignment in the War Department, as Director of Industrial Personnel for the Army Service Forces under Lieutenant General Brehon B. Somervell. Mr. Hughes assumed his new post April 14 and is succeeding James P. Mitchell.

Mr. Hughes is on leave from his position as operating vice-president of Indiana Bell which he had assumed only a month previously after having served from 1941-44 as assistant vice-president in the Personal Relations Department of the American Telephone & Telegraph Co. During his leave on the special War Department assignment, vice-president Harry S. Hanna of the Indiana Bell will take over his duties as acting general manager of that company's operations.

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EDITED BY J. S. REED JR.

Line AND Desk

Q. Why is it necessary to use a separate ground for a center tapped repeating coil and the ground of a grounded line connected to the repeating coil used to provide connection to a metallic telephone line paralleling a power line?

A. If the same ground were used for both the center tap and the grounded line, the power line noise currents induced into the metallic line would circulate in the grounded line due to the use of the common ground wire. The noise currents circulating within the metallic line are balanced out within the line itself by the grounded center tap on the repeating coil. The ground wire for the grounded line side of the repeating coil is carried back one span length to another made. This arrangement is shown in Figure 1.

Q. We have a number of grounded lines paralleling each other for about three miles and there is quite a little crosstalk on them, sometimes so bad that one line must wait until the other is through talking. Would a heavier ground at the central office help?

A. Crosstalk can be entirely eliminated only by the use of metallic lines properly transposed where necessary. However, if it is not possible for you to metallicize your lines, more or less relief may be obtained by the following measures:

1. Use of **multiple grounds** at the central office. A good arrangement uses three or more grounds placed three to six feet apart. Ground rods 1" diameter and 10' long are driven in a row at right angles to the exchange building with the first rod not less than one froot from the building. foundation. The rods are connected together by copper cable soldered to the rods. The cable and the rod. This method avoids the direct under the surface of the ground. We recommend the use of copperweld rods.
2. Checking **ground connections.** Ground connections at the central office and the subscribers stations should be inspected and resoldered if found to be loose. Ground rods too close to the building may have high resistance due to the soil being too loosely packed and too dry close to the building foundation.
3. **Chemical treatment** of the soil where it is found to be very dry. Dig a shallow circular trench around the rod and about a foot away from it. Place 10 to 20 pounds of rock salt in the trench and shovel the dirt back over the trench. Pour several gallons of water on the area around the rod. This method avoids the direct contact of the salt with the rod which might result in excessive corrosion of the rod. The ground resistance is often considerably reduced by the application of the salt.

METHOD OF CONNECTING 2-A REPT. COIL AS A DRAINAGE COIL ON A GROUND RETURN LINE.

NOTE: METALLIC SECTION OF LINE SHOULD BE PROPERLY TRANSPOSED.

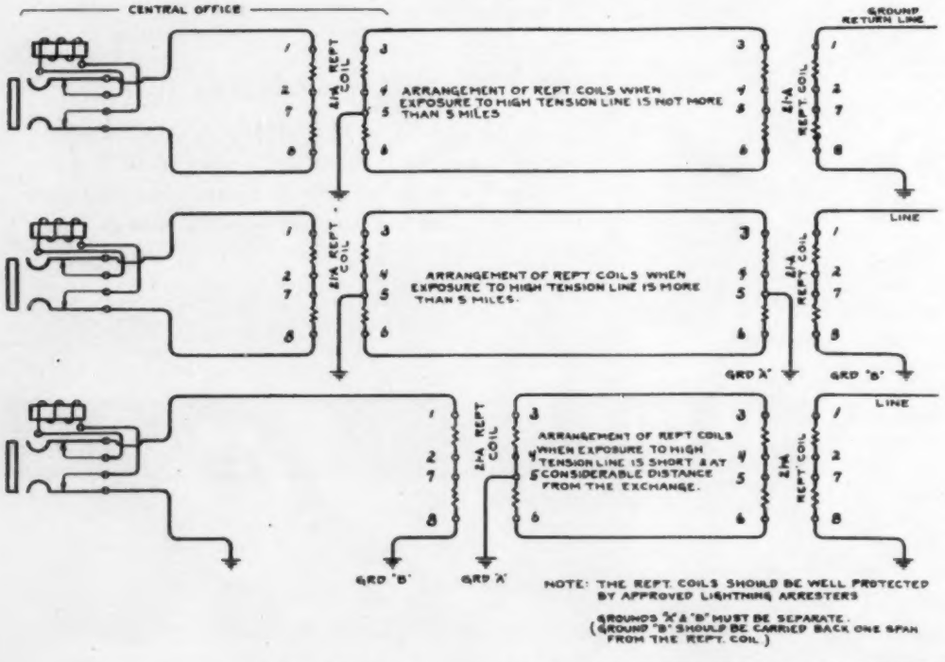
CENTRAL OFFICE
2-A REPT COIL
ARRANGEMENT OF REPT COILS WHEN EXPOSURE TO HIGH TENSION LINE IS NOT MORE THAN 5 MILES
GROUND RETURN LINE
LINE
ARRANGEMENT OF REPT COILS WHEN EXPOSURE TO HIGH TENSION LINE IS MORE THAN 5 MILES.
GRD 'A'
GRD 'B'
ARRANGEMENT OF REPT COILS WHEN EXPOSURE TO HIGH TENSION LINE IS SHORT & AT CONSIDERABLE DISTANCE FROM THE EXCHANGE.
NOTE: THE REPT. COILS SHOULD BE WELL PROTECTED BY APPROVED LIGHTNING ARRESTERS
GROUNDS 'A' & 'B' MUST BE SEPARATE.
(GROUND 'B' SHOULD BE CARRIED BACK ONE SPAN FROM THE REPT. COIL)

Fig. 1—Illustrating use of separate grounds for metallic and grounded sides of drainage coils in an exposed line. (Data courtesy of Kellogg Switchboard and Supply Co.)

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3. **Performing the functions of a timing device or timing switch when used in conjunction with a pulsing device.**

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Reading from left to right. (top) Nebraska Assn's newly elected Pres. W. W. Johnson found between sessions with H. F. McCulla, Lincoln; M. C. Walker and John Spady, both of Hastings. Officers and Directors of Nebraska Tel. Assn. are C. A. Patterson, Arapahoe; Neil Shreck, Bertrand; F. C. Thrasher, Red Cloud; Pres. W. W. Johnson, Columbus; Sec. George M. Kloidy, Lincoln; Otto Fuerst, Scottsbluff; H. L. Frentress, Omaha; E. C. Hunt, Jr., Blair; and D. M. Davis, Aurora. Presentation of a gift of a beautiful gold watch to George M. Kloidy, secretary of the association, by H. F. McCulla representing the association's Board of Directors. (center) Dan'l H. McNulty, Chicago; B. C. Burden, USITA engineer, Washington and F. M. Strasser, Lincoln relax near the registration desk. Retiring Pres. Otto Fuerst and newly elected Pres. W. W. Johnson. T. E. Longdon, Fairbury; Charles J. Crew, Geneva; and Tyler Ryan, Wilbur, "hold hands" between sessions. (bottom) State officials found in a huddle at the Northwestern Bell buffet dinner are Atty. Gen. Walter R. Johnson; and J. J. Brown, secretary; Duane Swanson, chairman; John H. Schnell and John Knickrehm all of the State R. R. Comm. TELEPHONE ENGINEER's Roy F. Smith chats with J. H. Agee, Lincoln, and USITA Sec.-Treas. Charles C. Deering. This view of the audience at the first meeting of the Nebraska Telephone Association on Thursday, April 13, gives the reader some idea of the interest shown to those participating in the program

Nebraska Convention Report

THE press of war time operating conditions, travel restrictions and a sleet storm which struck western Nebraska early in the week were no deterrents in the consummation of a highly successful and well attended convention of the Nebraska Telephone Association for 1944. The meetings were held in Omaha, April 13 and 14. In attendance, and included in the speaker's program, were key men of the various member companies, representatives of the Nebraska State Railway Commission, officials of the United States Independent Telephone Association, officers of the United States Army, and prominent figures in business.

Story and Pictures
By A. B. GORMAN

Keynoting the addresses included in the three general sessions, the large attendance of which was most gratifying to those in charge of proceedings, was the subject of post war planning. Other major topics were the effects

of government regulation, the importance of state and national associations, line construction, taxes, and the role of the telephone in the war effort.

The affairs of the Association are in splendid condition according to the report of the secretary-treasurer George M. Kloidy of Lincoln. He reported financial conditions as excellent and said that membership had increased from 99 telephone company members and 16 associate members at the end of 1942 to 100 company members and 18 associate members at the end of 1943. This represents a gain of 5,629 stations by member companies during 1943. Total company owned stations represented by the Association at the end of 1943 were 202,877.

W. W. Johnson, general manager of the Nebraska Continental Telephone Company of Columbus, was elected president; Neil Schreck, Bertrand, vice-president and George M. Kloidy, Lincoln was re-elected secretary-treasurer. Retiring officers were Otto Fuerst, president, of Scottsbluff and F. C. Thrasher, vice-president, of Red Cloud.

Re-elected to the Board of Directors for three year terms were Otto Fuerst of Scottsbluff, E. C. Hunt, Jr. of Blair, and F. C. Thrasher of Red Cloud. W. W. Johnson of Columbus was named a member of the Board to fill the unexpired term of A. B. Clark of Columbus who retired. The other members of the Board are H. L. Frentress of Omaha, H. F. McCulla of Lincoln, C. A. Patterson of Arapahoe, and D. M. Davis of Aurora.

President Otto Fuerst, in his annual report to the Association, spoke in highly commendatory fashion of the war time record of the telephone industry. The many complexities induced by the war such as procurement of experienced personnel, overloaded circuits, equipment restrictions and delays in obtaining replacements presented a real test to the men and women of the industry.

Mr. Fuerst spoke of the greatly augmented responsibilities of the Association. These were brought about by numerous requests generated by war time operating conditions from members for advice and assistance. He lauded in glowing terms the work of George M. Kloidy, secretary-treasurer, in his efficient and capable handling of the multitudinous details presented for disposition to his office.

He also expressed appreciation to Grover C. Johnson of the Northwestern Bell Telephone Company who attended the three district conferences

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Outstanding characteristics of Armstrong's Glass Insulators are accurate dimensions and true pin fit, and ability to withstand all weather conditions. In torrid heat or extreme cold . . . in rain or in snow . . . these rugged insulators have proved they can "take it."

Tests show that transverse strength exceeds that of supporting pins.

Ask us for samples, prices, and full information.

STROMBERG-CARLSON COMPANY
Factory and General Offices: Rochester 3, New York, U. S. A.
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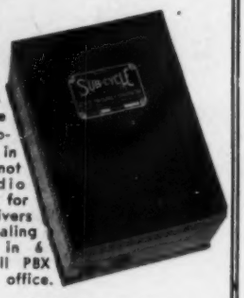
ONCE CONNECTED
YOU CAN FORGET IT—

SUB-CYCLE

Needs No Adjustments—
No Routine Maintenance
There Are No Moving Parts
To Get Out of Order

From every angle Sub-Cycle is certainly the ideal Ringing Converter. In addition to the above, it is economical and quiet in operation, will not interfere with radio reception. Is built for heavy duty and delivers a powerful signaling current. Made in 6 Models from small PBX to large central office.



FOR REAL RINGING SERVICE
YOU JUST CAN'T BEAT IT.

•

ALSO PULSATORS
Sold by Leading Distributors

THE LORAIN PRODUCTS CORPORATION
LORAIN, OHIO

held at Blair, Norfolk and Oxford and who was most helpful in presenting explanations of W. P. B. orders U-2 and U-3.

B. C. Burden of Washington, D. C., engineer of the United States Independent Telephone Association, delivered an entertaining and illuminating address on the subject, "A Blue Print For Tomorrow." He spoke of the rapid developments in new and improved equipment and advocated the addition of facilities and services which would produce convenience and comfort for subscribers and enhance the value of telephone service. He said that this would be necessary in order to meet competition for the consumer's dollar instituted by revolutionary advances in such fields as radio, television, electrification, automobile and airplane transportation, plastics, textiles and the like.

AN interesting and informative discussion of the Independent Pioneer Telephone Association was given by its president, G. B. Foscue, of Chicago. The principal qualification for membership in the association, as explained by Mr. Foscue, is that the person has a record of service with the Independent industry of at least fifteen years. In spite of the fact that no concerted drives for membership are conducted the roster has increased from a beginning of 74 to the present day total of 2500. Members are located in 29 states three of which, California, Nebraska and Texas, (listed in chronological order according to the date of charter) have active state associations chartered by the national organization.

KID SALVAGE

The first general session was terminated by an address delivered in masterful fashion by DeLoss Walker of Chicago who spoke on the subject, "Let Freedom Ring."

"Line Construction Rules" was the subject of Hugh W. Cargo, chief engineer of the Nebraska State Railway Commission. He outlined in some detail the laws of the state and rules of the Commission as they affect line construction. In general, these regulations are designed to effect proper construction principles in order to provide sufficient clearance and in order to protect the rights of all parties concerned.

W. H. Buckingham, tax commissioner of the Northwestern Bell Telephone Company of Omaha presented some interesting and timely information concerning "Telephone Taxes in Nebraska." He stated that, "The most important source of tax revenue in Nebraska is the tax on general property. A telephone company is required to pay taxes on land and buildings, personal, physical and intangible property used in its telephone operations in the same manner and at the same rates as a private corporation or individual is required to pay."

In speaking of assessment trends, Mr. Buckingham said, "It will be noted that the general trend of telephone property assessments has been upward, other classes downward.

P&H PENTA POLES

FULL-LENGTH TREATED NORTHERN WHITE CEDAR

TWELVE REASONS WHY
LEADING TELEPHONE COMPANIES
STANDARDIZE ON PENTA POLES

No. 5 . . . Uniform results of Penta treatment assured by laboratory control.

Watch for Reason No. 6

P&H

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MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.
"STILL IN THE LEAD"
Distributed by AUTOMATIC ELECTRIC SALES CORPORATION . . . STROMBERG-CARLSON COMPANY

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••••The marked increase in the telephone assessment in recent years is due principally to the underground cable line of the American Telephone and Telegraph Company and to equipment installed in Army air bases and training fields.

"The conclusion one must reach from study of these lines and figures is that telephone companies generally are a dependable source of tax revenues and that they are carrying at least their fair portion of the local tax burden."

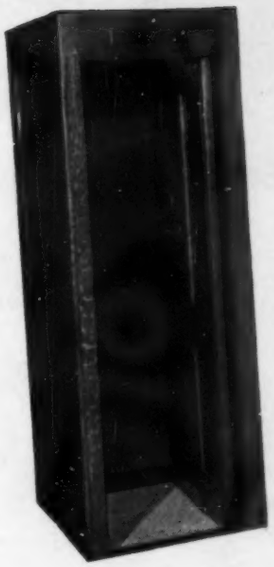
ONE of the high spots of the program was a discussion entitled "Wages and Hours" delivered extemporaneously by John H. Agee of Lincoln, vice president and general manager of The Lincoln Telephone and Telegraph Company, and chairman of the Wage-Hour Committee of the United States Independent Telephone Association. (See special article by Mr. Agee in this issue.)

The third general session was opened by an address by Charles C. Deering of Des Moines, secretary-treasurer of the United States Independent Telephone Association, who spoke on the subject "Why an Association." He said that national association is necessary and helpful because of the "self protection, security and comfort" that it provides for its members. The association is in a position to handle problems, vital to successful operation, in which many companies are interested. Legislative matters, particularly the amendment of the Wage-Hour Act which exempted certain small companies, and the increase in toll compensation paid by the Bell companies to connecting companies were cited as pertinent examples.

"Nebraska After the War—Its Problems and Opportunities" was the topic discussed by Frank Fogarty, general manager of the Omaha Chamber of Commerce, in an outstanding and well organized address. He was definitely optimistic in his predictions for Nebraska's development in the post war era. Contributing factors will be increased purchasing power, the pent up demand for products, new inventions and improved ways of doing things, the clearing of personal debts and the accumulation of savings.

A WELCOME guest in the convention program was Colonel Richard T. Schlosberg, chief signal officer of the Seventh Service Command at Omaha. He was introduced by H. F. McCulla, general commercial superintendent of The Lincoln

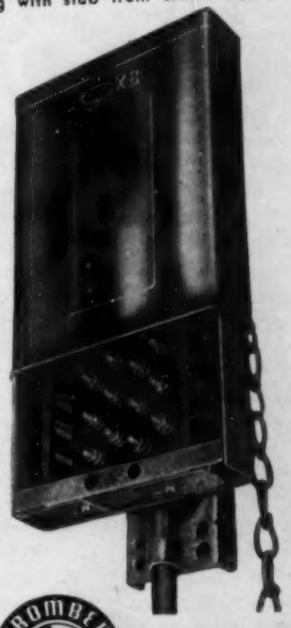
STROMBERG-CARLSON
RECOMMENDS—



Saves
Through Longer Service and Smaller Installation Cost

COOK XB
CABLE TERMINAL
(Unprotected)

Available in 6 to 26 pair sizes, the Cook XB Unprotected Cable Terminal offers many important features.
Patent metal guards exclude snow, rain, dirt, and insects at the drop wire openings.
The patented plastic faceplate and insulated fanning strip are molded in one piece.
Raised stud mountings eliminate surface leakage.
Patented cable entrance and cable holding sleeve provide secure and tight cable joint.
The compound is completely filled by an exclusive moisture-proofing process that insures against shorts and grounds by permanently positioning the cable pairs.
Heavy reversible zinc hood permits mounting with stub from either top or bottom.



The
CHURCHILL
TELEPHONE BOOTH
An Invitation to Use the Pay Station

Operating companies have found the **CHURCHILL** No. 100 Folding Door Telephone Booth a builder of pay station business.

It is constructed as a single unit and equipped with a reinforced back panel for mounting a wall telephone or coin collector.

The **CHURCHILL** Booth is made of selected white oak and is available in light or medium oak in a satin finish.

Included as standard equipment are electric light and automatic electric ventilator.

Overall height is 84¾"; width, 29"; depth, 30½". Shipped knocked down and crated.

Illustrated literature available.

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During the Tennessee Independent Tel. Assn. meeting, S. B. Dibble, Jr., C. S. Stanton, A. E. Reynolds, and H. T. Miller listened attentively to B. C. Burden, USITA Engineer.

Telephone and Telegraph Company, who expressed the appreciation of the operating committees for the capable and efficient manner in which the Signal Corps had handled military telephone matters in Nebraska and the spirit of friendly understanding and cooperation which had pervaded the service. In attendance with the Colonel and introduced by Mr. McCulla to the convention were three members of his staff, Major George Redhair, Captain Paul Hintz and Lt. Waldo McDowell.

Colonel Schlosberg's discussion of the telephone work of the Signal Corps was both interesting and informative. He spoke of the difficulties besetting the Corps at the start of the defense program when the Army was faced with a large telephone construction job with limited trained telephone personnel. To solve the problem the army built up its personnel from members of the telephone industry and asked the telephone industry to do much of the actual construction and installation work. In addition, the operation and maintenance problems were turned over to the telephone industry.

In concluding his address, Colonel Schlosberg said, "As I remarked earlier in my talk, we in the Seventh Service Command are extremely well pleased with the outstanding job that the telephone industry as a whole has done for the Army. We have found this to be true, that it matters not whether a certain military establishments is being served by an Independent telephone company or by the Bell, the service furnished has in all cases been most satisfactory and you in the telephone service have done much to help the Signal Corps 'Get the message through.' I say to you, the telephone people are meeting the test and we in the Signal Corps have every confidence that you will continue your fine work."

The third and last session was closed by a sparkling discourse entitled "Traveling or Going Somewhere" by Tom Collins, publicity director of the City National Bank and Trust Company of Kansas City. Mr. Collins practically had his listeners rolling in the aisles with his scintillating repertoire which he emitted in rapid fire order. It was a most appropriate finale to an interesting and entertaining convention program.

There were several notable high lights during the proceedings in addition to the regularly scheduled program.

The newly elected president, W. W. Johnson, was presented during the final session and spoke briefly. He praised the work of the retiring president and pledged himself to the task of carrying on the affairs of the association.

A definite high spot in the impromptu proceedings was the awarding of a token of the esteem and appreciation of the association for his work to George M. Kloidy, the secretary-treasurer. The presentation was made on behalf of the Board of Directors by H. F. McCulla. One slight hitch occurred when Mr. Kloidy attempted to adjust a recalcitrant curtain after having been called upon by Mr. McCulla. With characteristic thoroughness and meticulous attention to detail, Mr. Kloidy finished the job before appearing before the crowd and the ensuing repartee between the two was thoroughly enjoyed by the spectators. In serious vein, Mr. McCulla commended Mr. Kloidy in the highest terms for his unstinting devotion and outstanding ability in carrying out the numerous duties of his office.

The Northwestern Bell Company was host at a buffet supper served in the evening following the first session and supplied entertaining motion pictures at the supper and following the first two sessions.

On the nominating committee were C. L. Kelly of North Bend, M. R. Becker of Pawnee City, and J. A. Hawkins of DuBois. The resolutions committee was composed of H. D. Thompson of Wisner, Otto Enerson of Hartington and George Gilsdorf of Lawrence.

The convention for 1945 will be held in Lincoln according to an announcement made by the Board of Directors.

General Annual Report

Despite the unprecedented demands during 1943 made on the facilities of the companies of the General Telephone System, including the greatest number of telephone calls in the System's history, "the operating companies have continued to furnish satisfactory telephone service," President Harold V. Bozell stated in the 1943 annual report of the Corporation issued March 15.

At the end of the year, the 19 operating companies that form the General Telephone System had 643,984 company-owned telephones in service, an increase of 33,209 over the number at the beginning of the year. In the past four years the number of telephones served by the System has increased 26%, the report stated. At the same time, the report added, the companies have cooperated wholeheartedly with the Government in its critical materials conservation program, and as a result of increasing shortage of facilties,there were 12,200 unfilled applications for service at the end of 1943. The System's operating companies furnish complete telephone service through 803 exchanges in 17 states. Average number of daily calls in 1943, was 3,465,000.

Consolidated net income applicable to the 637,070 shares of common stock of General Telephone Corporation outstanding was $1,426,022, or $2.24 per share, compared with $2.22 a share in 1942. Consolidated operating revenues were $27,540,754, a total of $3,171,848, or 13%, in excess of those reported for for 1942. Local service revenues were up 6%, while toll revenues showed an increase of $2,166,661 or 36%, the latter gain being due in part to greatly accelerated long distance usage, and in part to additional revenues accruing from new agreements negotiated with the Bell System companies covering the division of revenue from toll service. Operating revenues of $15,708,160 recorded a 7% increase over 1942, and taxes increased from $5,340,300 in 1942 to an all-time high of $7,463,202 in 1943

LETTERS

from TELEPHONE ENGINEER readers

Dear Mr. Smith:

In regard to the attached question and answer that appeared on page 26 of your April 1, Fortnightly TELEPHONE ENGINEER.

His trouble is caused by electro static and electromagnetic induction from the grounded REA line to the telephone line, and this induces the longitudinal voltage and current on his metallic telephone line that he speaks of. Now it is natural that that this voltage be on his line under the conditions he mentioned, and no amount of transposing or replacing insulators will stop his trouble.

All he needs to do is cut in a "ring thru" repeating coil somewhere between the switchboard and the point at which his line begins to follow the R.E.A. line. This could be in the telephone office or out on a pole. However, if installed out on the pole line a suitable protection from weather and lightning must be provided.

This repeating coil will stop all longitudinal current and voltage from coming on into his switchboard, and thereby stop all the shocking that the operators are now experiencing.

I have made a special study of "Inductive coordination," and have had 16 years experience in problems like these.

Yours very truly,

John Culbertson
District Manager
Georgia Continental Tel. Co.
118 N. Jefferson St.
Dawson, Georgia

♦

Dear Ray:

I am enclosing pictures of the earth boring machine which Mr. J. Willis of the North Lewisburg Telephone Company, North Lewisburg, Ohio has recently completed and added to the derick outfit of which you so graciously printed an account and pictures in the November 15th

Completed earth boring machine and owner, Jim Willis.

STROMBERG-CARLSON
RECOMMENDS—

Crapo
HIGH-TENSILE
LINE WIRE

For Long-Span
Low-Cost Lines

Construction costs are reduced to a new low level, maintenance expense is minimized, wherever Crapo HTL-85 and Crapo HTL-135 High-tensile, Low-resistance Line Wires are used. These revolutionary wires, with their superior strength, make possible rural lines with span lengths one and one-half to two and one-half times greater than were practical heretofore.

Crapo HTL-85 permits spans to 225 feet in heavy, 325 feet in medium, and 375 feet in light loading districts; provides stronger spans on existing pole structures.

Crapo HTL-135 makes possible spans of from 350 feet in heavy to 500 feet in light loading districts. Both wires possess superior telephonic transmission qualities.

Crapo HTL-85

Crapo HTL-135

Write for technical data!

SUB-CYCLE

"MASTER"
RINGING CONVERTER

No Moving Parts . . .
Nothing to Adjust

Sub-Cycle brings to the telephone field an exclusive development in an *alternating current* Power Ringing Converter which fully meets the requirements of operating companies.

It produces a powerful ringing current entirely independent of frequency variations in the commercial power supply.

Economical and quiet in operation, it does not interfere with radio and requires no routine maintenance.

Available in 6 models suitable for loads required for small P.B.X.'s to large central offices.

Output Capacities
7½ to 40/50 watts

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PROGRESS IN TELEPHONY

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Multi-Lock

The anchor that was built to Suttle specifications

Check These Features

- Largest expanded area per ounce of weight
- Rib-braced in every direction—can't break
- 4-step lock—can't slip
- Simple—fool-proof
- Curved plates claw into ground solidly
- Can't-slip nut holder

70" expanded area.....$1.34
56" expanded area..... 1.08

Another of the Better Quality Products You Always Get from Suttle

DEPEND ON SUTTLE

For Quicker Longer Service

ACTUAL SIZE

SYLVANIA TUNGSTEN TELEPHONE SWITCHBOARD LAMPS

FASTER—Light up in one-fifth second.

BRIGHTER—Maximum end-on candle power. Sharper daylight signals.

STRONGER—Average life 1,500 hours of high brilliancy. Strong breakage resistant filament. Tight, correctly formed bases.

Available in: CLEAR
NATURAL RUBY*
NATURAL GREEN*

**While present supply lasts*

SYLVANIA

ELECTRIC PRODUCTS INC.

SALEM, MASS.

Formerly Hygrade Sylvania Corporation

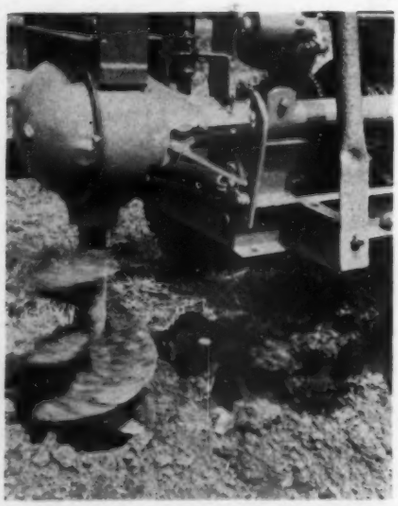
Machine in operation—can dig 5'x12" hole in 3 to 5 seconds.

issue of your magazine.

Jim has proven to me through a demonstration of his earth boring machine that anyone with ingenuity, etc. can certainly save themselves a lot of hard work when it comes to digging pole and anchor holes with a machine of the type he has manufactured from used automobile parts ranging from gears to transmissions.

The only parts that Jim had to buy new were the auger and the shafting for the digger the other parts being picked up here and there from junk piles and used auto yards and including his time the machine was made for less than $200.00 which in my estimation is very cheap considering the labor and time this outfit will save on even one job of pole line construction or maintenance in the everyday life of the telephone plant.

The machine as it is now will dig a five foot hole twelve inches in diameter but by using another auger and a longer shaft



Close-up of auger in operation.

View of machine at start of new hole.

can be made flexible enough for any size poles and anchors since it can dig at an angle as the snapshot shows.

For anyone further interested in the details of the machine by writing to Mr. Willis I am sure he could give more of the construction details than I could possibly do even though space wasn't limited.

I am sorry you couldn't get down to the Ohio convention however we had a nice visit with your brother Roy who explained you were very busy and couldn't make it at the particular time so we will probably see you at some of the other meetings this summer.

With best personal regards I remain.

Yours Very Truly
J. H. Walls, Representative
Kellogg Switchboard & Supply Company

♦

Gentlemen:

I am glad to be a subscriber to Telephone Engineer and try to get some of each issue read and the advertisements are a help with telephone work I feel.

The Line and Desk column I find interesting. Most of what I do needs plain work to accomplish what is needed. I find the magazine is beneficial in properly directing me in this work.

In the April issue on wartime maintenance, I have available a compression type insulator which I have been using on dead ends which will not cause cross arms to split as they would with a pin insulator as has been past practice and now am contemplating rebuilding a corner and using 4 x 4 fir covered with tin cans and No. 12 iron wire over this to the compression insulators and thence with the No. 12 BWG iron line wires. This will make it easy for me to open each circuit for testing and should help me in clearing some noise and bad joints.

Sincerely yours,
Robert K. B. Saxon
Falmouth, Indiana

Farragut, Iowa Exchange Sold

W. H. Burt of Creighton, Nebraska, has purchased the telephone exchange in Farragut, Iowa, from the Public Service Company, owned by J. J. Whisler.

Mr. Burt recently received a medical discharge from the armed services. He was in the telephone business for five years prior to the war. He will not take over the business for several months.

The Farragut exchange was organized in 1901, and in 1929, Mr. Whisler took over the entire ownership. He has since put many thousands into improving the system.

Intermountain Revenues Increase 50% in 1943

An increase in gross operating revenues of $180,522 over the previous year, representing an increase of $53,224 or 8% in local revenue and $120,013 or 41% in toll revenue, was recorded by the Inter-Mountain Telephone Company in its annual report for 1943. This huge increase in toll revenues, the report stated, was brought about by the abnormal use of toll circuits on account of war conditions and through the new toll compensation contracts offered by the Bell System companies to the Independent companies. The report was issued by Kelley McNish president of the Inter-Mountain company.

Additions to the plant were considerably under that of a normal year, due to limited quantities and restrictions on materials and the considerable amount of permanent construction work for the Government on which 75% of the construction cost in lieu of mileage charges was collected. These two factors, plus the greatly expanded installation of party lines due to the shortage of cable facilities, resulted in a decrease in investment per station from $102.09 in 1942 to $98 in 1943.

The report stated that net earnings for 1943 amounted to $132,450 or $1.61 per share, with an increase recorded in operating expenses for the year amounting to $86,782. The company had a gain of 12.7% in long distance calls over the previous year. Through the cooperation of the Bell System, the company established seven additional long distance circuits and one additional TWX circuit. Gross operating revenues for 1943 were $1,160,207.

The report noted that, while there was a net gain of 2,207 stations in 1943, during the last six months the shortage of cable facilities and lack of instruments made it impossible for the company to fill about 50 percent of requests for local service. In postwar planning, data is being compiled on the advisability of converting some of the exchanges to automatic operation.

STROMBERG-CARLSON
RECOMMENDS—

Nicopress
OFFSET
DEAD ENDS
offer Many Advantages

1. They are designed for use on copper, Copperweld and iron wire.
2. Simplicity and speed of installation.
3. Strength and tightness.
4. Provide for a tail of any desired length.
5. No extra tools are required to make the offset dead end as the same tool used in making regular line splices will do the job. These convenient Nicopress Tools are small and compact and are extremely easy to operate close to the insulators or cross arms.

MINUTES SAVED
The Job Is RIGHT!

DILLON DYNAMOMETERS accurately determine the pound pull on power, transmission, and guy strand. Direct readings save valuable time. Ordinary workmen can easily operate the DILLON DYNAMOMETER.

Specifications:

- Mechanism not injured by overload
- 1/4" shatterproof safety glass crystal
- Will withstand full shock recoil
- Large, easy-to-read numerals
- Compact (8 1/4" x 6 1/4" x 3")
- Light in weight (8 lbs. 4 oz.)
- Galvanized shackles will withstand 25,000 lbs.
- Certified Accuracy
- Readings directly in lbs.

For Years of Reliable Service, Insist on the
DILLON DYNAMOMETER

A Precision Instrument for Precision Line Testing

Accurate
Dependable
Rugged

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LATE MAIL DELIVERY

If your magazine is late, please excuse it. Patience is asked by the Post Office Department during these times of heavy deliveries and diminishing manpower.

ELECTROX
BATTERY
ELIMINATOR

GIVES WORRY-FREE SERVICE

Operates direct from lighting circuit. Delivers constant, humless D.C. to operator's circuit on magneto switchboard. Power-off relay assures uninterrupted service in case of power failure. Low in cost! See your jobber, or write direct for full information.

SCHAUER MACHINE COMPANY
2059 READING RD., CINCINNATI 2, OHIO

The Independent Telephone Company---In the Squeeze

(Continued from page 31)

or vacation operators, each exchange would require a minimum of 8,760 operator hours of paid time per year, and at ten cents an hour, the average increase would be $876.00 per year per exchange. Applied to the 314 Class C and D exchanges in Illinois, the total increase in cost would be $275,000, or 164 per cent of the 1942 operating income for the same companies.

The following table will show the highest exchange rates and the lowest exchange rates now in effect in Illinois in the different classes of service:

That schedule is brought up to date, at least within a period of about thirty days. I couldn't get the minimum switching charge, but in some places I think it is 10 or 15 cents a month. The Commission has been inclined during the last several months to fix a switching charge of approximately $1.00 per month.

It is obvious that the highest rates are in effect at only a few of the exchanges in Illinois. It should further be obvious that the commerce commission of this state, in ordering such rates, has recognized the fact that they are not "higher than the traffic will bear." **Actually, the experience of those companies which have obtained increases in rates during the past few years, and particularly during the past two years, show that with the increased rates, they have increased the number of their subscribers.** It is obvious also that those of you who require additional revenue in order to successfully operate your companies, and who are not now charging the maximum rates as shown in this table, can obtain increases in the event that you are entitled to them and your case is properly presented to the Commission.

UNDER the laws of Illinois, a telephone company is entitled to a fair return on the fair value of its property which is used, useful and reasonably necessary to render service to its subscribers. The Commission is required by law to give consideration to original cost and reproduction cost new, depreciated, in determining a "Fair Value," and to authorize rates which will give a fair return thereon. Under Commission and Court decisions, all reasonable operating expenses are deductible, including all taxes, state and federal. Illinois Supreme Court decisions hold that the Commission should include in "Fair Value," a reasonable amount for a going concern.

Under recent United States Supreme Court decisions, it is obvious that the finding by a commission is final unless it it so erroneous as to "shock the conscience of the court." This does not happen very often!

Your future, then, is primarily in your hands, and in the hands of your state commission.

You are fortunate here in Illinois to have an outstanding personnel in the Commerce Commission in charge of telephone regulatory matters. They are men who have spent years in their specialty and are sympathetic towards the necessity for maintaining adequate telephone service at a reasonable rate. You are also fortunate in that you have as members of the Commerce Commission, business men and lawyers who believe in fair play and in a continuation of the individual enterprise system.

I do not overlook the fact that under the existing federal laws, a thirty day's notice is required to be served upon the Office of Price Administration before a hearing can be held before the state commission on an application for an increase in rates, and that the O. P. A. may intervene. However, the Director of the Utilities Division of the O. P. A. is an experienced commissioner from our neighboring State of Wisconsin. He is familiar with regulatory problems affecting telephone companies. While some of his associates are imbued with the idea that no increased rates of any kind should be permitted to any utility under war conditions, I do not believe that you would experience too much difficulty with the O. P. A. if you are in a position to prove your case before the Commerce Commission.

Various decisions have been handed down recently by courts and commissions holding that the more restricted attitude of the O. P. A. is unreasonable and unjust, and that utilities as regulated industries are entitled to a fair return on the fair value of their property, now, as heretofore.

I wish to urge upon you who are owners of exchanges with more than five hundred stations, and are operating at a loss, or without a fair return on the fair value of your property, to get your house in order as soon as possible. Be prepared to present to the Commerce Commission

of Illinois, facts and figures to sustain an increase in rates to take care of the additional amount which you will be required to pay the operators in wages in the very near future, under the forthcoming order of the Wages and Hours Division of the Department of Labor, and to provide a fair return on the fair value of your property. Although a complete appraisal is not necessary in Illinois in order to obtain an emergency increase in rates, it takes some time to prepare any rate case. If, however, you are not prepared to file your application immediately when the forty-cent order is entered, if it does come, there will be a substantial liability built up against you after its effective date while your hearings are being held before the Commission. I urge also upon those of you who own exchanges with less than five hundred stations that you be prepared to move as early as conveniently possible for an application to increase your rates to a reasonable amount, in order to take care of increasing wages and other costs which are bound to come, and to provide you with a fair return on your property.

In that connection, I may suggest that the Commerce Commission of Illinois has indicated that as to Class A companies, a maintenance charge of six dollars per year per station is not out of line. You all know that the Bell cost for maintenance in comparable properties runs from eight to twelve dollars per station. I apprehend that some of you have been reducing your maintenance in order to keep your heads above water during the last few years, rather than to apply for higher rates. That, of course, is highly inadvisable.

THE question is frequently raised—can the smaller exchanges stand higher rates? The schedule set forth above should answer that question for you. If you are not already charging the highest rates heretofore authorized by the Commerce Commission of Illinois at your exchanges, as shown herein, you can be assured that your companies can stand higher rates without loss of stations by reason thereof, provided you give a good commercial grade of service.

Your State Association, I am sure, can and will be helpful in directing the preparation of a rate case for you. The larger companies also can lend a hand to help you out of the squeeze. Surely, many of you cannot continue to operate a 1944 telephone system on hodge-podge rates, many of which were put into effect more than twenty years ago and now have whiskers on them.

In Minnesota, there is a progressive state association with a live wire secretary—Jack Crowley—who has lived and breathed telephony for more than twenty-five years. Some time ago, he and his board of directors commenced financial

STROMBERG-CARLSON
RECOMMENDS—

Look for this Trade-Mark

MTC

"The Stamp of Character"

Product of

T. J. MOSS TIE COMPANY

Poles bearing this trade-mark are your guarantee of the highest quality creosoted southern yellow pine poles.

Every pole bearing this mark is completely supervised from tree to consumer by men experienced in the industry.

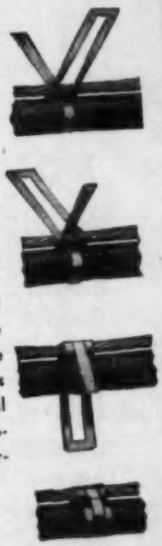
PREVENT
Early Cable Discard by Eliminating

- SHEATH CUTTING
- CREEPING and
- RUSTING

With

Reliable
ZINC CABLE HANGERS

Prolong the life of your cables at least for the duration—rehang them, although they may be badly worn, with Reliable Zinc Cable Hangers. All cable movement that results in wear and sheath cutting is eliminated. Added protection against lightning is provided—cable bound and solidly grounded to the messenger. Reliable Zinc Cable Hangers are strong, economical and easily installed. Request complete information and prices.



★

"RELIALBLE" IDENTIFIES THE QUALITY

The four simple steps above clearly illustrate the simplicity of a Reliable Zinc Cable installation.

STROMBERG-CARLSON COMPANY
Factory and General Offices: Rochester 3, New York, U. S. A.
Branch Offices: Chicago, Kansas City, San Francisco, Toronto

Have You the Chassis to Put UNDER THIS BODY?

IF YOU HAVE, HERE'S GOOD NEWS!

American Coach can NOW furnish a limited number of Utility Bodies and equipment of the following types: Line Construction Bodies (Model D P L and D T) • Service and Meter Bodies (Model 4460) • General Utility Compartments (Model 4804) • Street Light Patrol Bodies (Model 4671) • Revolving Aerial Ladders (Model 4644) • Telephone Rural Installation and Maintenance Bodies (Model 4551).

With the manpower shortage, increasing costs, and the tremendous pressure on your construction and maintenance crews, you certainly need good equipment— equipment that will really save time and labor, decrease physical strain on your men and increase efficiency. American Coach Utility Bodies and equipment do just this.

So if you have a new chassis or a good used one write, wire or 'phone for details and complete information.

Some Reasons Why "Americans" Are TOPS:—
Correct Design • Superior Quality Construction • Comfort • Convenience • Safety • Endurance • Low Operating Cost • Fine Appearance

THE American COACH & BODY CO.
PUBLIC UTILITIES EQUIPMENT FOR MOTOR VEHICLES

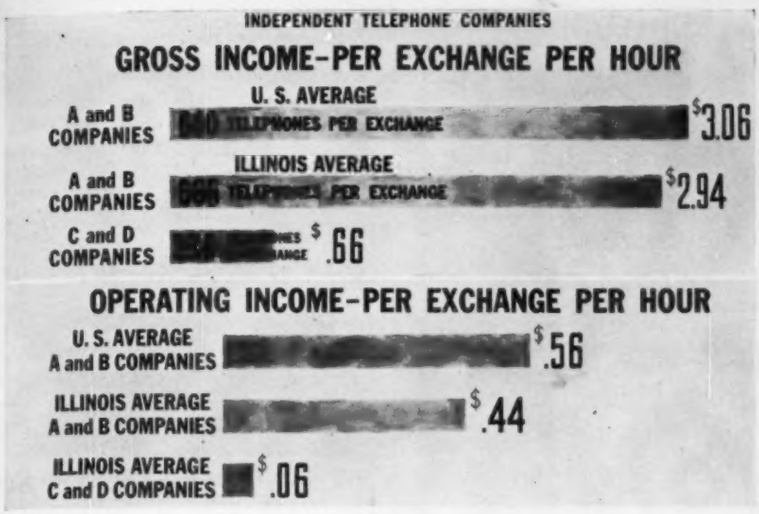
studies of Independent telephone companies of that state in preparation for wholesale filing of rate applications immediately upon the entry of the anticipated order for increased wages by the Wages and Hours Division of the United States Department of Labor. Mr. Crowley and his directors do not intend to permit the Minnesota companies to be further caught "in the middle of the squeeze."

In a country in which the average family spends forty-seven cents a day for liquor, sixteen cents a day for tobacco, eleven cents a day for cosmetics and fifteen cents a day for movies, it is reasonable to believe that the most prosperous segment of our various communities can pay more than five or six cents per day per family for essential telephone service. It seems ridiculous even to argue the point, yet in the State of Illinois the **highest** single-party residence rate charged by any Independent company averaged only twelve cents a day, and the lowest, believe it or not! excluding the farmers' cooperatives, average only three cents per day. The average rate for four-party residence service, which comprises the majority of all residence telephones, is about $1.85 per month, or just six cents a day. The average business man, doctor, lawyer, pays about $3.75 per month—twelve cents a day, for a business telephone which gives him the right to almost instant communication with his entire community. (See Exhibit III Appendix).

Another question asked is whether increased rates should precede or follow improvements in service.

It is of course true that in many of the smaller exchanges the equipment provided and the service rendered is such that some subscribers would consider any rate that might be fixed to be too high. On the other hand, to give improved service under present rates would seem to be more fantastic. Certainly, no one could be expected to put additional money into an enterprise that was barely earning operating expenses on its present investment, or actually operating in the red. It is not uncommon for a utility commission to order an increase in rates on some classes of service to be effective immediately, and increases on other classes after their engineering departments certify that certain improvements have been made. This course can very well be followed where the service has already deteriorated too much by reason of too low rates.

It can be expected that when many of our boys return from their service in the Army, they will have been educated to a higher grade of telephone service than that now rendered in some of the smaller communities in which they have lived. They will expect and demand bet-



ter service. You will be required to give better service and, to do so, you must obtain adequate rates or fall by the wayside as unsuccessful operating officials.

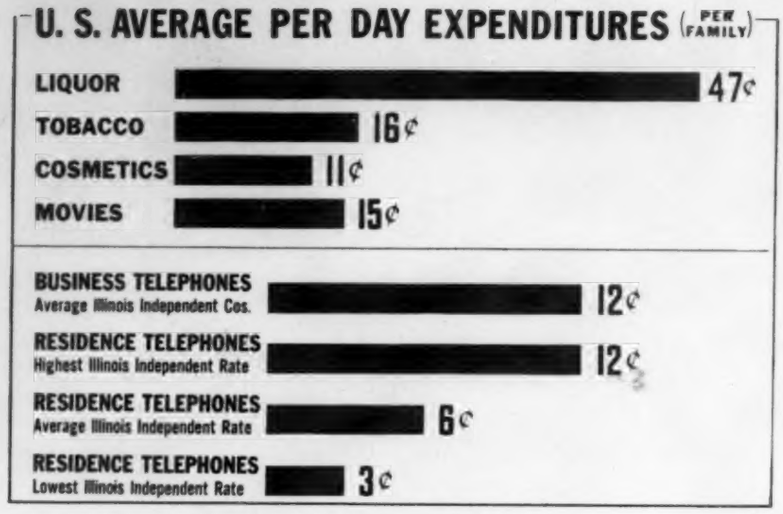
THERE is a general impression throughout America that telephone companies are now receiving a considerable amount more than heretofore in added toll compensation. While but few of the annual reports for 1943 have been filed with the Commerce Commission of Illinois, and those only for Class C and D companies, it appears that there has been an incerase in toll compensation in 1943 over 1942 for those companies of approximately five per cent of the gross revenue. There has been a small increase in this state in station revenue, but you will recall that, notwithstanding that fact, 24 out of the first 100 reports coming in from Class D companies show they are still operating in the red. The overall ratio of station revenues to toll revenues in Illinois in 1942 was in the neighborhood of 75 per cent station revenue to 25 per cent toll revenue. The reports which have come from Class C and D companies indicate that the ratio for 1943 will be 70 per cent exchange revenue to 30 per cent toll revenue. It is recognized, of course, that following the war there will probably be a substantial reduction in the volume of your toll revenue.

Some telephone managements have been flirting with the idea that probably exchange service could be reduced below twenty-four hours per day. That has been tried somewhere. It was tried up in Minnesota. The concensus however, appears to be that the people of America will continue to require round-the-clock service. Most of them are willing to pay for that service, although some subscribers will always object, no matter what the rate may be. However, with a sound departmental personnel in your commerce commission and a reasonable commission to deal with, you should have no difficulty here in Illinois in obtaining justice so far as rates and operations are concerned. And I might add that you won't obtain anything but justice. In other words, don't try to put anything over on the operating personnel down there, or on the Commission.

There has been a tendency on the part of the owners of many smaller exchanges to sacrifice in service, hold down wages,

FOR QUICKER EASIER TRIMMING WORK
use SEYMOUR SMITH TOOLS...
TREE TRIMMERS
POLE SAWS
BRUSH CUTTERS
CABLE CUTTERS
JOINTED TEST-PIKE POLES
A line of tools designed for linemen's use that are standard equipment with the world's largest Utility Companies.
Send for folder and prices of this labor saving equipment.
SEYMOUR SMITH & SON, Inc.
483 Main St., OAKVILLE, CONN.

Fire!
NERO
might have stopped fiddling long enough to have turned in a 5th alarm to Rome's fire fighters if he could have phoned it over LongLife Drop Wire.
Favorable Public Relations are easier to maintain when you use LongLife Drop Wire.
LongLife DROP WIRE
Distributed by GraybaR
WB
THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899



and even in some instances to cut salaries of management in order to continue operating, rather than to apply for reasonable rates. In some states, there have been violations by telephone companies of the Wages and Hours Act and suits have been instituted against some of the Independents for many thousands of dollars, sometimes more than the exchanges are worth. In some instances, the companies have lost.

In a recent claim filed against a company in Minnesota, counsel for the claimant is taking the position that while switchboard operators at exchanges with less than five hundred stations are exempt from the Wages and Hours Act, that if such switchboard operators devote any part of their time to work other than switchboard operating, they are not exempt. An opinion of the Wages and Hours Division of the Department of Labor, which has not been ruled upon by the courts, holds that if a switchboard operator devotes more than twenty per cent of her time to work other than switchboard operating, she is not exempt, and the present thirty-cent minimum applies. The Minnesota case has not yet been settled. If the matter is presented to the courts, it is of course impossible to determine what the decision may be. At least, the matter is one to which telephone management must give some attention and take the necessary steps to protect themselves in the meanwhile.

DEAN MORSE, a member of the National War Labor Board, some months ago, in an opinion referring to the telephone industry, said:

"It is one of our most important public service industries, vital to the efficient operation of our domestic economy, and particularly essential, along with other communication systems, to the prosecution of the war. Traffic charges of telephone companies, like the charges of other public utilities, are regulated more or less stringently by state and federal laws, with the result that the companies are not absolutely free to charge what the traffic will bear. Hence, the low wages prevailing in the industry are the result, at least in part, of government regulation of telephone charges and thereby of telephone profits. However, from the standpoint of a sound social policy, the country can ill afford to have any great industry contract to pay wages so low that its employees cannot maintain a decent standard of living. It is to be hoped that the telephone industry as a whole will find it possible to make the necessary adjustments so that such sub-standard wages as exist in the industry can be eliminated speedily."

As a matter of encouragement to you, I quote from a letter from Prentiss M. Brown, former head of the OPA to Judge Fred M. Vinson, Director of Economic Stabilization, requesting the issuance of an order authorizing the payment of wages up to forty cents per hour, without authorization of the Director of Economic Stabilization or the National War Labor Board:

"I should like to state the position of OPA with respect to the increases,"—that is, increases up to 40 cents an hour, without permission of any governmental body. "We consider the elimination of sub-standard wages to be basic to the economic stabilization program. Any price which requires the payment of sub-standard wages is a price which we do not wish to hold. We are willing, therefore, to accept whatever price consequences may flow from the elimination of sub-standard wages. Any price adjustment that may thus be required cannot be said to impose an undue burden on the community at large. On the contrary, it merely removes an advantage which the community at large has enjoyed at the expense of these low-paid wage or salaried employees."

MANY of you are giving consideration to the installation of automatic telephones. It may be that you will be required to follow the policy of other industries in this country in mechanizing your properties in order to continue successful operation. That costs money. If you do not have rates adequate to operate successfully now, financing problems will face you if and when the time comes that you determine upon improvements to your property, whether they be automatic or otherwise. Your industry cannot be closed down. You must continue to operate. You must continue to render service. If your rates are such now that you cannot give adequate service and maintain a healthy financial condition, your only recourse is an application for increased rates.

In the interest of these United States of America, in the interest of the people of the communities you are serving, and in your own interest, the apparent lethargy you have shown in the past toward obtaining that which is necessary for your continued successful operation must be overcome. Affirmative action must be taken now to protect your business and and put your house in order.

Your patriotism will not be determined by holding down wages and maintenance to the detriment of the public service, but by paying better wages, providing adequate maintenance to aid in the war effort, and charging rates sufficient to maintain a financial structure which will permit you to further improve your service at the conclusion of the war and continue thereafter as a successful operating enterprise.

— THE END —

Southern California Authorized For Toll Expansion

Late last month, the Southern California Telephone Co. was granted authority by the FCC to supplement its existing toll facilities between Anaheim and Riverside, Cal., with the construction of 37.2 miles of additional cable of which 22.2 miles will be underground. The project will cost $728,500.

At the same time, the Pacific Telephone & Telegraph Co. filed an application this week for a $298,000 project for the construction of additional underground cables between San Francisco and Oakland.

The increased toll facilities of the Southern California Co. were needed because of the huge amount of naval training in that area. The construction will provide 126 additional telephone toll circuits between Anaheim and Riverside and the same amount of additional exchange trunking channels at Riverside.

Training Course

(Continued from page 34)

appear between contact arm and contact will in effect increase the total resistance of the shunt, thus causing more current to flow through the moving coil than normal, hence resulting in the meter reading being high.

The error **is greatest on the high current range** due to the fact that on this range the resistance of the shunt is lowest, hence contact resistance is more effective in causing error.

The disadvantages of the simple shunt just described can be eliminated by what is known as the **ring shunt.** The ring shunt differs primarily from the simple shunt in that all of the shunts required for the several ranges are permanently connected in series across the moving coil rather than used independently.

Under this arrangement any contact resistance appears in series with the main meter circuit rather than the shunt, hence does not affect the accuracy of the readings.

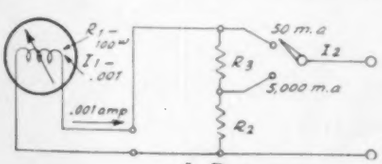
Ring Shunt Design

THE design of the ring is somewhat more complicated inasmuch as several resistances all connected in series are used. The formula for the ring shunt for a two shunt meter is as follows:

$$R_2 = \frac{I_1 (R_1+R_2+R_3)}{I_2}$$

Where I_1 — Current in moving coil
I_2 — Current in line
R_1 — Resistance of moving coil
R_2 — Resistance of high current section of shunt
R_3 — Resistance of low current section of shunt

An example of a ring shunt computation is given in Figure 16-2. It will be seen that this meter like the one shown in Figure 16-1 consists of two ranges except that the ring shunt is used. It will also be noted that the value of R_2+R_3 must first be computed by the simple shunt formula.

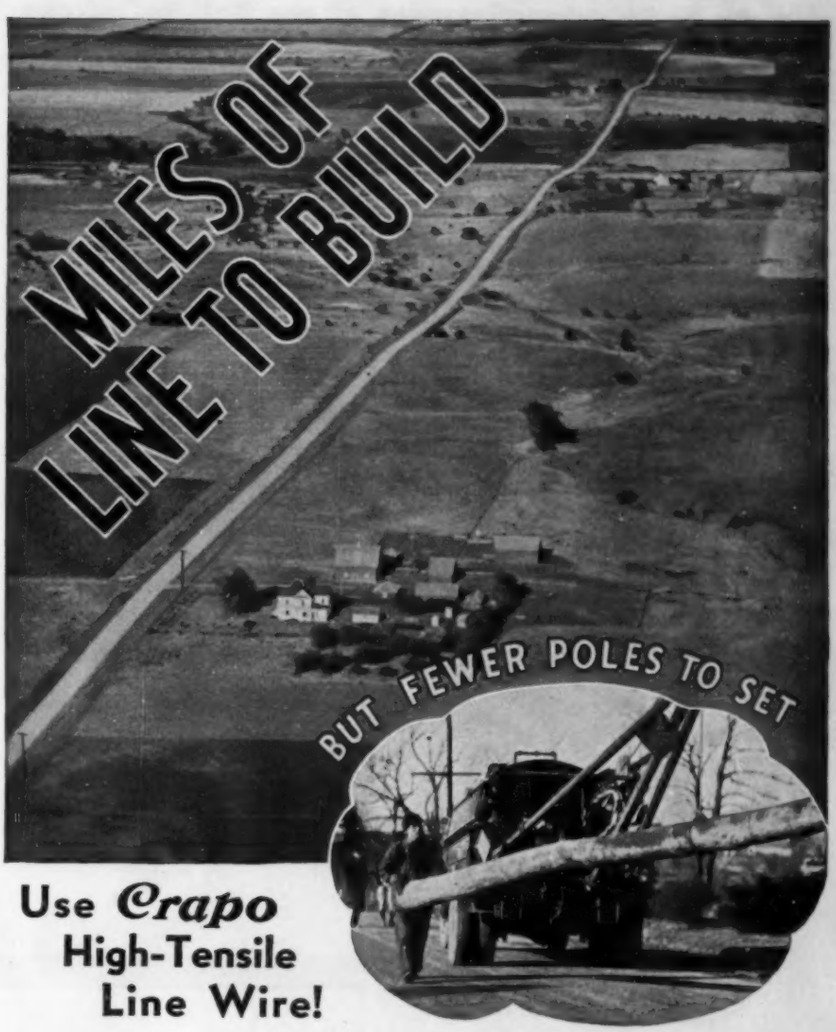


$$R_2 + R_3 = \frac{I_1 R_1}{I_2} = 2.04\omega$$

$$R_2 = \frac{I_1 (R_1+R_2+R_3)}{I_2} = .0204\omega$$

$$R_3 = (R_2 + R_3) - R_2 = 2.019\omega$$

Fig. 16-2.—Design of Two Range Ring Type Shunt.



Use *Crapo* High-Tensile Line Wire!

You can build more miles of line with less material and less labor when you use *Crapo* High-Tensile, Low-Resistance Line Wire.

Crapo **HTL-135, with two and one-half times the strength of standard B.B. wire, can be erected on poles 350 feet apart in heavy loading, 450 feet apart in medium loading and 500 feet apart in light loading districts. This means that the number of pole structures per mile in heavy loading areas may be reduced to approximately 15—a saving of nearly one-half.**

Crapo **HTL-85, with 60% greater tensile strength than B.B. wire, provides for spans of 225 feet in heavy loading, 325 feet in medium loading and 375 feet in light loading areas.**

Conservation of material and labor—always important in rural line construction—today is more essential than ever because of existing shortages. To save materials and man-hours—now and in your post-war building program—specify *Crapo* High-Tensile Line Wire for your open-wire circuits!

Write for Technical Data!

Send today for Bulletins No. 201 and No. 202 containing physical, electrical and sag and tension data and construction practice information! Or, contact your distributor of *Crapo* Galvanized Telephone Wire and Strand.

INDIANA STEEL & WIRE COMPANY · MUNCIE, INDIANA

An advertisement of the Bell Telephone System

Our job is often a family affair

The advertisement on the opposite page appears in national magazines during May. It is one of a series designed to help keep Long Distance lines clear for service men and women during the evening hours. That's part of our war job now—and an important one for every telephone user, too.

HELP HIM GET THAT

LONG DISTANCE CALL

THROUGH TONIGHT

You can do it by not using Long Distance between 7 and 10 P. M. Those are the night-time hours when many service men are off duty and it's their best chance to call the folks at home.

BELL TELEPHONE SYSTEM

Two Circuit Shunts

ANOTHER type of shunt which has the same advantage as the ring type shunt but which is a somewhat different arrangement is that known as the **two circuit shunt.**

The two circuit shunt requires a separate shunt for each current range and these shunts are designed by the simple shunt formula: i. e., $R_2 = \frac{I_1 R_1}{I_2}$

However, the several ranges are selected by a **two circuit switch** which eliminates the error inherent to the single switch type. Figure 17 illustrates how this arrangement eliminates error due to contact resistance. Either the ring type shunt or two section shunt are preferable to the simple shunt on a multirange meter.

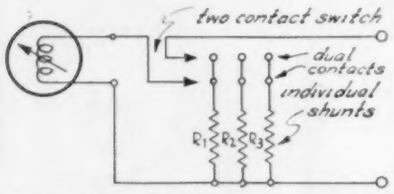


Fig. 17.—Two Circuit Type of Simple Shunt.

Three Range Ring Shunt Design

THE following examples illustrate the methods described above for computation of either a ring or simple type shunt.

Example No. 1 — Compute the resistance of the two **simple shunts** required to change an -1 milliampere meter whose moving coil resistance is 100 ohms to a three range meter having ranges of 0 to 10, 0-100, and 0-1000 milliamperes. (See Fig. 18).

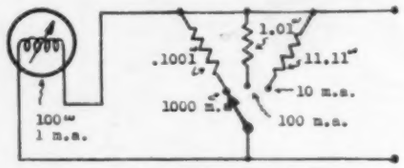


Fig. 18.—Three Range Simple Shunt Design.

(10 M.A. shunt)

$$R_2 = \frac{.001 \times 100}{.009} = 11.111 \text{ ohms}$$

(100 M.A. Shunt)

$$R_2 = \frac{.001 \times 100}{0.099} = 1.01 \text{ ohms}$$

(1000 M.A. shunt)

$$R_2 = \frac{.001 \times 100}{0.999} = 0.1001 \text{ ohms}$$

Three Range Ring Shunt Design

EXAMPLE NO. 2 — Compute the resistance of the shunts required for a **ring shunt** for an 0 to 1 milliampere meter whose moving coil resistance is 100 ohms, and to have three current ranges of 0-10, 0-100, and 0-1000 milliamperes. (See Fig. 19).

Step No. 1—Compute the resistance of the entire **ring shunt** for lowest current range using simple shunt formula:

$$R_4+R_3+R_2 = \frac{I_1 R_1}{I_2} = \frac{.001 \times 100}{.009}$$

$$= 11.111 \text{ ohms}$$

Step No. 2 — Compute resistance of highest current range using ring shunt formula:

$$R_2 = \frac{I_1 (R_1+R_2+R_3+R_4)}{I_2}$$

$$R_2 = \frac{.001 (100+11.111)}{1.0} = 0.1111 \text{ ohms}$$

Step No. 3 — Compute resistance of next to highest current range using ring shunt formula:

$$R_2+R_3 = \frac{.001 (100+11.111)}{0.100} = 1.1111 \text{ ohms}$$

Telephone Engineer

HANDBOOK TABLES

File—Pole Line Design
Date—May 15, 1944

Subject—Moments of Resistance of Poles at Ground Line.

When a pole is designed to have a certain strength to resist overturning under the maximum possible storm stress, it is necessary to know what pole ground-line circumference will provide the desired strength of the line. After the maximum pole strength is computed in terms of total moment of resistance at the ground line in foot-pounds (Handbook Tables—March 15, 1944), the ground-line circumference of the desired type of pole is found by reference to the table below, which is based on the formula:

$$C = \sqrt[3]{\frac{M}{.000264\ F}}$$

Where: M = Moment of Resistance in Foot-Pounds.
F = Fiber Strength of Pole in Pounds per Square Inch.
C = Ground-Line Circumference in Inches.

Moments of Resistance in Foot-Pounds for Ground-Line Pole Circumferences:

Ground-Line Circumference in Inches	Northern White Cedar Fiber Strength— 3600 lbs. per sq. in.	Western Red Cedar Fiber Strength— 5600 lbs. per sq. in.	Southern Yellow Pine Fiber Strength— 7200 lbs. per sq. in.
20	7,600	11,800	15,600
21	8,800	13,700	18,100
22	10,100	15,700	20,800
23	11,600	18,000	23,800
24	13,100	20,400	27,000
25	14,900	23,100	30,500
26	16,700	26,000	34,700
27	18,700	29,100	38,500
28	20,900	32,500	42,900
29	23,200	36,100	47,600
30	25,700	39,900	52,800
31	28,300	44,000	58,200
32	31,100	48,400	64,000
33	34,200	53,100	70,200
34	37,400	58,100	76,800
35	40,700	63,400	83,800
36	44,300	69,000	91,000
37	48,100	74,900	99,000
38	52,200	81,100	107,200
39	56,400	87,700	115,900
40	60,800	94,600	125,000
41	65,500	101,900	134,600
42	70,400	109,500	144,700
43	75,600	117,500	155,300
44	81,000	125,900	165,400
45	86,600	134,700	178,000
46	92,500	143,900	190,200
47	96,700	153,500	202,800
48	105,100	163,500	216,100
49	111,800	173,900	229,800
50	118,800	184,800	244,200
51	126,100	196,100	259,100
52	133,600	207,900	274,700
53	141,500	220,100	290,800
54	149,700	232,800	307,600
55	158,100	246,000	325,000
56	166,900	259,600	343,100
57	176,000	273,800	361,800
58	185,400	288,500	381,200
59	195,200	303,600	401,200
60	205,300	319,300	422,000

$R_3 = (R_2+R_3) - R_2 = 1.00$ ohms

Step No. 4 — Determine resistance of final shunt by subtracting: i. e.,

$R_4 = (R_4+R_3+R_2) - (R_2+R_3)$

$R_4 = 11.111 - 1.111 = 10$ ohms

Miscellaneous Features of Ammeters

IN the electronic and communication field the D.C. milliammeter is the most useful type of ammeter, inasmuch as the performance of vacuum tube circuits can best be analyzed by measurement of their plate currents. For most electronic uses an 0 to 100 milliampere meter is best adapted, however both higher and lower ranges are often required.

Microammeters are most useful in connection with photoelectric cells

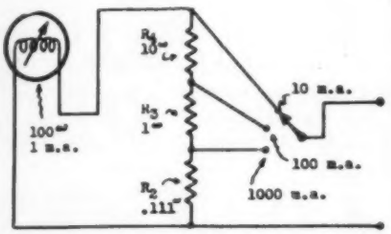


Fig. 19.—Three Range Ring Shunt Design.

where the currents involved are seldom over 10 or 20 microamperes.

A microammeter for use in photoelectric work should have a range of not to exceed 25 or 50 microamperes.

To cover a wide range of current measurements, three meters should suffice: viz.,

(1) An 0—50 microammeter

(2) A multi-range milliammeter with ranges of 1, 10, 100, and 500 milliamperes

(3) A multi-range ammeter with ranges of 1, 10, and 50 amperes.

Any direct current instrument must be correctly **poled** or it will read backward. That is, the positive terminal of the meter must be connected to the positive terminal of the source in order for the meter to read correctly.

Polarized Vane Type Ammeters and Voltmeters

AMMETERS and voltmeters, such as are used on automobiles and in connection with some radio test units where inexpensive instruments must be specified, utilize a somewhat different principle of operation than the movements heretofore described. Such instruments serve merely to give an approximate indication of current or potential conditions in a circuit and should never be used where accurate readings are required.

The ammeters used in practically all automobiles are of the **polarized vane type.** This type instrument is a modified form of the fixed coil-movable magnet type of instrument previously described. Fig. 20 illustrates the arrangement of parts. It consists essentially of (1) a fixed coil (a single

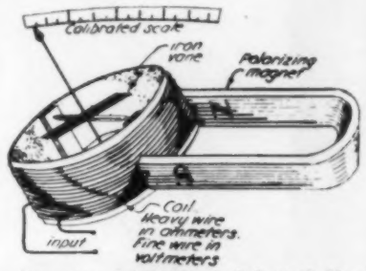


Fig. 20.—Principle of Polarized Vane Type Instruments.

turn of large size copper wire in ammeters); (2) a small soft iron vane attached to an indicator needle and arranged on a pivoted shaft so that the vane normally lies at right angles to the magnetic field created when current is passed through the coil; (3) a small magnet fixed in position located below the soft iron vane so that it polarizes the vane.

(Editor's note—The second section of Lesson XII and the Questions for both parts will appear in June.)

USITA Committee on Merit Award Is Created

President C. F. Mason of the United States Independent Telephone Association, has appointed a Committee on Merit Award and has charged it with the responsibility of canvassing the Independent field and making recommendations concerning the bestowal of awards of merit to persons who have performed outstanding service to the industry. The members of the committee are: Oscar Burton, chairman; J. H. Agee; W. M. Angle; E. C. Blomeyer; and C. D. Brorein.

The committee invites correspondence and offering of suggestions to assist it in performing its work. Letters should be addressed to Chairman Oscar Burton, Gulf States Telephone Company, Tyler, Texas.

Belcher Elected A.T.&T. Treasurer

Donald R. Belcher, assistant comptroller of the A. T. & T. Co. was elected treasurer of the company recently at the meeting of the Board of Directors, which followed the annual stockholders' meeting.

Mr. Belcher succeeds James F. Behan, who reached the company's retirement age of 65 this month. The election of Mr. Belcher was effective May 1.

The E. P. DIVERTER POLE MOTOR GENERATOR

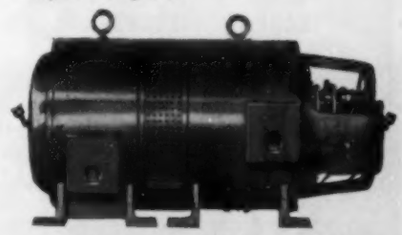
Assures Constant, Stable Voltage Plus 100% Safety Factor.

DIVERTER POLE CONSTRUCTION

It Is Equipment Especially Designed For Charging Telephone Exchange Batteries To Assure Constant Voltage And Battery Life.

The life and performance of a battery is dependent on the accuracy of the charger in maintaining a controlled charging rate under all conditions. The Diverter Pole Generator . . . . .

• Insures constant exchange voltage within very close limits on 24 hour continuous duty. This constant charging also insures, at all times, the proper rates essential to secure best battery performance. • Equipment is precision manufactured and especially designed with skewed slots to reduce to a minimum any frequencies and harmonics which might be objectionable on the lines. • It is capable of delivering its rated current capacity at a sufficiently high voltage to accomplish a quick re-charge of the battery following any prolonged power interruption, as well as for an occasional overcharge. • It is free from any characteristics of "running away" or reversal of polarity in case of power discharge from the battery into the generator. • It *automatically* transfers to the battery any current demands beyond the normal capacity of the generator. • It *automatically* returns to its original voltage when the load drops back to normal. • Thoroughly tested in laboratory and field for more than 20 years, the Diverter Pole Generator delivers long, trouble-free service and assures real saving in battery and power expense.



Write for Bulletin 96 giving full details.

The Electric Products Co.
1739 CLARKSTONE ROAD • CLEVELAND 12, OHIO

HUBBARD

HUBBARD PRODUCTS INCLUDE

ANCHORS and RODS
BOLTS CLAMPS
BRACKETS BRACES
GUY GUARDS and STRAPS
GUY WIRE PROTECTORS
NUTS and WASHERS
SEATS SHIMS STEPS
SCREWS FIXTURES

—and hundreds of other hardware items for pole line construction

Comments like that—which you hear from telephone men everywhere—are common for Hubbard Pole Line Hardware.

Over a long span of years the men who service the vital telephone lines of our country have come to look upon Hubbard Hardware as a friend. They know that once a job's completed with Hubbard they won't be back to make repairs and replacements. They know that Hubbard Pole Line Hardware will last for years . . . for the "duration," or for many durations if you want to put it that way.

Right now, these qualities in Hubbard hardware are paying dividends. Telephone men with Hubbard-equipped plants are sitting pretty, confident of the service built into these quality products.

DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET • CHICAGO 7, ILLINOIS

Highlights of the Communications News

(Continued from page 36)

to British Empire business should be remedied.

Pointing out that primarily the adequacy and control of communications is a security problem in which the armed services especially in wartime are concerned, Senator Wheeler cited that the Army and Navy views on the Nation's communications policy would be of extreme interest to the Subcommittee. He cited that the problem of making communications adequate for our own commercial needs and independent of other nations was a strange situation for the "largest and most powerful nation in the world"—the United States.

The Montana Senator in his statenent touched on the question of foreign interest and ownership in some American companies and the ownership by some U. S companies of foreign enterprises. He warned the American companies to move slowly in making commitments to foreign governments or companies on "internationalizing" facilities prior to the formulation of an American policy. He noted that the special State Department committee created sometime ago could take no action pending the formulation of a Congressional policy on international communications.

Senator Wheeler commented that another problem of "pressing importance" is the vast amount of communications equipment owned by the armed forces which will be awaiting disposal after the war.

* * * * *

Court's Ruling on Hotel Telephone Surcharge Ban

IN the decision of the Federal District Court for the District of Columbia on the hotel long distance telephone surcharge case, Justice Daniel O'Donoghue held that the FCC had valid authority to rule on the extra charges of hotels for telephone service and to require telephone companies to institute tariffs covering those surcharges.

When the mails are late or if your copy doesn't reach you, please wait for a few days before writing.

The proposed 15% commission to be paid by the telephone companies was a business proposition which was not a subject for court to consider.

Justice O'Donoghue stated that "in the opinion of the court the testimony in this case actually fails to show that these hotels are agents of the telephone company. There was no written agreement to that effect introduced here; there was no oral agreement to that effect; and there was no testimony from which this court could imply the existence of an agency in the hotels on behalf of or as agent of the telephone company."

Hotels Are Subscribers

"In the opinion of this court the hotels are subscribers. They enter into a contract with the telephone company. *** They get the bill every month or two and they pay the telephone company.

"Now that being so, the telephone companies have no control whatever over what these hotels are doing in regard to this surcharge. But they have knowledge of it. At least, if they didn't have knowledge of it before this case came up, they have knowledge of it today. As a matter of fact the testimony shows that they have had knowledge of it for some time because they have discussed the matter and endeavored to make some settlement of it."

The court, his opinion continued, stated that while it could enjoin the telephone companies the facts in the case show the companies are not violating the tariff schedules. Since the hotels are not agents of the telephone companies, he said, the companies are not responsible for what the hotels are doing now.

Whether or not the hotel associations will appeal the decision had not been determined as this issue went to press. The FCC is going to conduct an inquiry into the reasonableness of the telephone company tariffs banning the surcharges May 24 .

Comprise 4% of War Production

Communication and electronic equipments comprise four percent of the total munitions needs of the Army and Navy for 1944, it was revealed in charts released by the Army and Navy May 4 under a new policy change which removed partially secrecy restrictions about war production information. The percentage estimate is as of March 1 and was based on the theory that Germany would not be defeated in 1944, but it was pointed out the schedules are flexible and can be revised downward if the armed services' requirements are suddenly reduced.

National Association, Great Help to Small Telephone Companies

Describing the small Independent telephone companies as the backbone of that branch of the industry, Clyde S. Bailey, executive vice-president of the United States Independent Telephone Association, in an address May 11 before the Wisconsin State Telephone Association emphasized that both the National Association and the State Associations are giving a substantial amount of attention to the problem of the smaller units in the industry. He also assured the State Associations that the national organization wants to achieve the fullest sort of cooperation in mutual questions.

Making the subject of the smaller companies the major keynote of his

at **KNITTING We Are Not-So-Hot** *but---*

at REPAIRING or REBUILDING TELEPHONE EQUIPMENT . . .

WE ARE EXPERTS

. . . in fact, not only are we experts at repairing and rebuilding telephone equipment, we are the world's largest precision rebuilders of transmitters.

Our 18 years of SERVICE to the industry has made many friends for us. Our moderate prices plus superior workmanship are holding these customers.

We invite your problems.

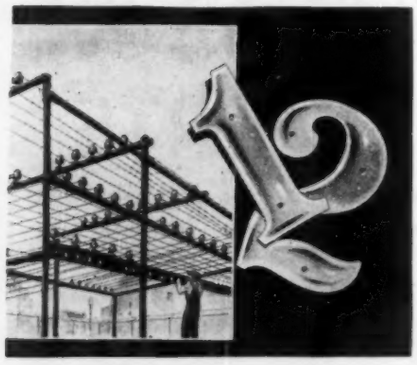
DAN'L H. McNULTY, President & Manager

TELEPHONE *REPAIR* & *SUPPLY* COMPANY

'Since 1926'

Rogers Park Station, Chicago 26, Illinois

Keep poles straight . .
With
CHANCE
POLE KEYS
Here is a peace time product that will help you to keep pole lines erect when guy anchors are not available. Chance Pole keys will take the place of anchors in many instances and they are available now for shipment from stock. Actually this is an expansion anchor which expands into solid earth at the base of the pole. One of these anchors can be installed in approximately fifteen minutes. The sketches at right show the method of installation.
Write for complete details on this highly efficient, labor saving anchor which you can obtain without delay.
A·B·CHANCE CO·
CENTRALIA MISSOURI


PREMAX
For Permanent Identification
When the stenciled markings on poles and other equipment have weathered away, look into Premax Stamped and Embossed Metal Letters, Figures and Pole Markers.
They'll do the job at less than stenciling cost . . . and last as long as the pole.
Premax Products
Division Chisholm-Ryder Co., Inc.
4409 Highland Ave., Niagara Falls, N. Y.

address, Mr. Bailey reviewed the various accomplishments of recent years which the USITA had achieved for the small companies and declared that far from having overlooked the latter, they have been given "a very considerable amount of attention." He pointed out that much of the time of the National Association's headquarters staff is devoted to meeting individual requests for information, for advice and for interpretations of government orders.

Secured Connecting Company Exemption

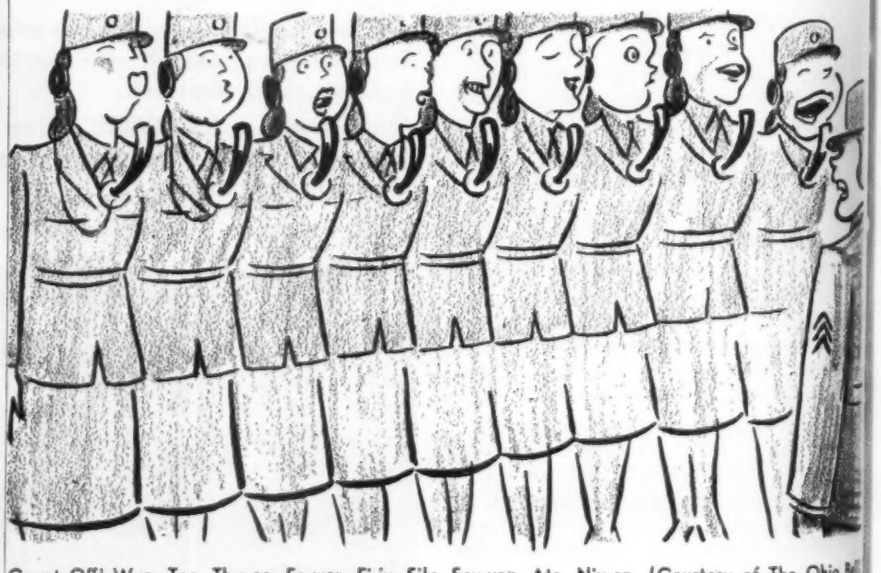
IN his review of the work of the USITA for the small companies, he went back to the fact that the National Association had secured the connecting company exemption in the Communications Act and then in regard to the Wage-Hour statute the USITA had won an amendment exempting all telephone exchanges with less than 500 stations which "without question has saved the life of thousands of small exchanges all over the country."

Other accomplishments have been the acceptance by the FCC of not only the further extension of the date for completing a continuing property record but the simplest possible form of accounting requirements for Class C and D companies. The National Association also secured considerate treatment of these small companies by the OPA in regard to projected rate increases so that exchanges of 500 or less stations do not need to file certain statistical data required of the larger companies. The National Association likewise worked on behalf of the small companies in the important matter of toll compensation.

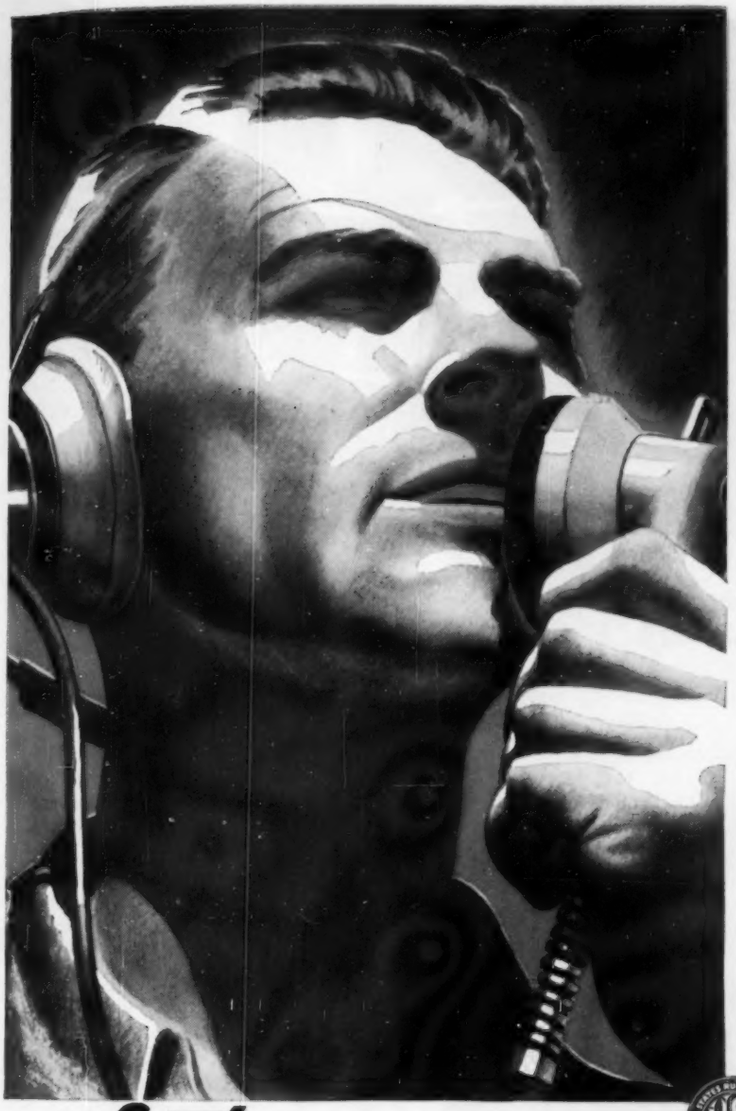
Clyde S. Bailey

Praises Director Peebles

MR. BAILEY praised the work of the WPB Communications Division and its Director Peebles for the handling of the restrictions on materials and equipment during the war. While these restrictions have been many, he expressed the view that if there had not been any such limitations many of the Independent companies would have experienced such abnormal gross as to have endangered their peacetime service. In fact, many of the restrictions have served as a valuable protection to the telephone companies, he added. He noted that Director Peebles and his Division are alert to the needs of the telephone industry in providing relaxation of outstanding orders as the tension eases up on critical materials. Despite the problem of rising operating expenses with "astronomical taxes," he declared that telephone companies will not curtail service except as a last resort.



Count Off! Wun, Too, Th-r-ee, Fo-wer, Fi-iv, Siks, Sev-ven, Ate, Niy-en. (Courtesy of The Ohio Bell



"FIGHTING WORDS"

—TAKE A LOT OF WIRE!

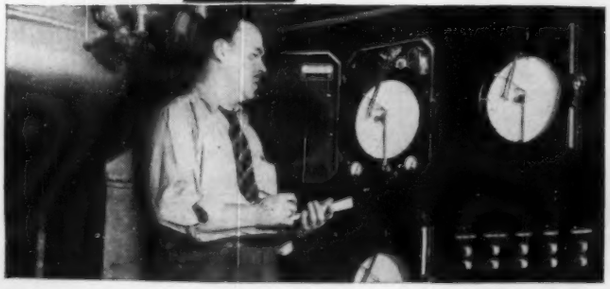
The ease with which wires and cables can be handled, speed with which they can be installed and readiness with which they can be maintained are tremendously important in battle-zones.

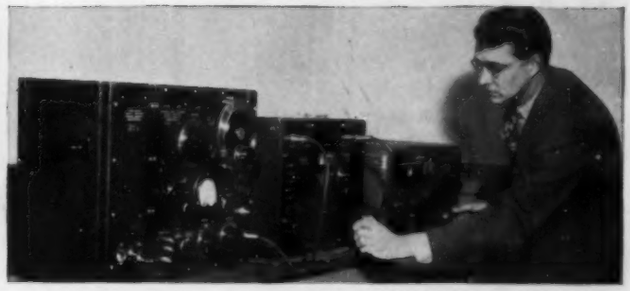
To get these advantages, the Signal Corps developed wires and cables having appreciably smaller diameters, with corresponding reductions in bulk and weight. Working in close cooperation with Signal Corps Engineers, U.S. Rubber Company engineers contributed the Laytex process.

Long before the war, this process was used for insulating small diameter wires for building, commercial and control circuits. The Laytex process made possible the famed lightweight Laytex Assault Wire of front line use, and has been adapted to a wide variety of other wires and cables for Ordnance, Corps of Engineers and the Navy.

When the day comes that we can again make peacetime versions of these smaller diameter wires and cables they will bring you extra advantages in meeting the increased capacity requirements of the vast new wiring, re-wiring and re-conversion markets. Smaller wires will save shipping and storage space—handling and installation will be easier.

Laytex WIRES AND CABLES — **SERVING THROUGH SCIENCE**





THE SCIENTIFICALLY CONTROLLED LAYTEX PROCESS is an exclusive method of (1) specially preparing and compounding wire insulation ingredients, and (2) applying the insulation. Purification operations remove 90% of moisture and water soluble impurities from liquid latex so as to form the basis for insulation of unusually high dielectric strength. Repeated dipping and drying followed by vulcanizing results in building up a homogeneous, small diameter insulation in which conductors are perfectly centered. The process is adaptable to the use of synthetic rubbers as well as natural rubber. In either, the insulation is compounded to resist extremes of temperature, from tropical heat to sub-zero cold. Evidence of this property is the global use of Laytex wires and cables by our Armed Forces.

Listen to the Philharmonic-Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E.W.T. Carl Van Doren and a guest star present an interlude of historical significance.

UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE, ROCKEFELLER CENTER, NEW YORK 20, N. Y. • *In Canada:* DOMINION RUBBER CO., LTD.

Sturgis
WOOD OPERATOR CHAIRS

No. 222-FR

1. Form fitting back and deep, saddle seat upholstered in genuine leather over curled hair pads.
2. Easy, "floating" swivel mechanism.
3. Available in 4 seat height ranges: 18 to 22"; 21 to 25"; 24 to 28" and 28 to 32".
4. Solid maple frame with all joints glued and dowelled.
5. Wide choice of leathers and finishes.

Sold by Telephone Supply Houses
Manufactured by
STURGIS
POSTURE CHAIR COMPANY
Sturgis, Michigan

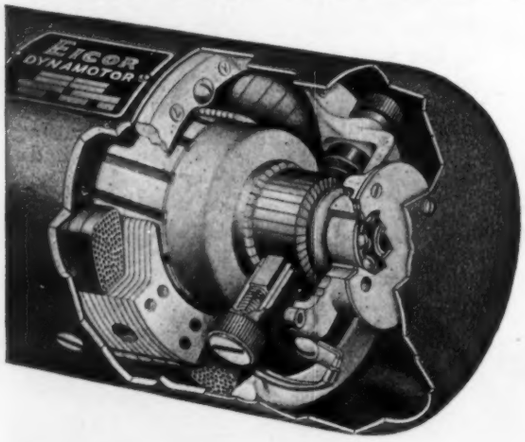
Left to right: Col. C. F. Stanton; C. F. Bradley, local union president; M. W. Heinritz, vice president, Philco; and Commander J. C. Harris holding Army-Navy "E" flag with three stars.

Philco Storage Battery Division Honored at Fourth "E" Award

Another star was added to the production battleflag of the Storage Battery Division of Philco Corporation, Trenton, N. J., in colorful exercises at the plant, when Commander J. C. Harris, officer in charge, Electrical Section, INM, Philadelphia, presented the Division with its Fourth Army-Navy "E" Award for continued excellence in war work.

Ceremonies marking the presentation opened with the singing of the Star Spangled Banner, led by Daniel Morrison, a production worker. Presiding was J. G. Green, assistant general manager of the Division.

Prominent army, navy and government officials attended the presentation ceremonies.



Isometric Cut-Away View of an
EICOR
DYNAMOTOR

EICOR produces a Dynamotor for *every* need—from the smallest in size to the largest in output. Our complete line of frame sizes makes possible the greatest available range of dynamotor output ratings, sizes and weights.

WALL CHART AVAILABLE
18" x 24" reproduction of this isometric cutaway, complete with dynamotor data on outputs, sizes and weights available without charge to engineers and instructors. Write for it on company or official letterhead.

EICOR INC. 1501 W. Congress St., Chicago, U.S.A.
DYNAMOTORS • D. C. MOTORS • POWER PLANTS • CONVERTERS
Export: Ad Auriema, 89 Broad St., New York, U. S. A. Cable: Auriema, New York

Southern States Show Greatest Telephone Growth

The Southern states are recording the highest rate of growth of any section of the United States, Walter S. Gifford, president of the American Telephone & Telegraph Co., was reported to have stated last fortnight in Atlanta. For the Southern states, the rate of growth is about 50 per cent higher than in other regions during recent years.

The first big job which the Southern Bell plans to do after the war is the filling of 100,000 applications for telephones which have been blocked due to the shortage of materials, Mr. Gifford stated.

Oklahoma Operator Handles Deluge!!

Not only did the break-over of the Arkansas river into Kaw City, Oklahoma, flood the town—which in turn flooded the Oklahoma Telephone Company switchboard with calls—but the high water also made impossible the return of the assistant operator so that Gladys Woodward, chief operator, was kept at the switchboard constantly from 16 to 18 hours a day. Miss Woodward stayed at her post for four days, even eating her meals while placing calls and answering the night bell at all hours.

NARUC Committee in Chicago

The Accounting and Statistics Committee of the National Association of Railroad and Utilities Commissioners commenced a session May 3 in Chicago to analyze the continuing property records of the Illinois Bell to ascertain if they met the requirements of the FCC and State Commissions. FCC assistant chief accountant Henry M. Long and Raymond Anknera of the New York FCC accounting office, who has specialized on telephone accounts, represented the Federal Communications Commission at the meeting, while Bell System representatives also attended the sessions.

Telephone Advertising Institute

The Telephone Advertising Institute display being shown at current state conventions has aroused much interest and enthusiasm for the advertising program the Institute is offering Independent telephone companies. Plans are now being made to show the exhibit at the Pennsylvania, New York and other state meetings.

Particularly noticeable has been the great amount of interest being displayed by the smaller companies, and applications are arriving daily from both these and larger companies. Some request has been made for special adververtisement sizes and seasonal advertising, such as Christmas, Easter, etc., and this material will be included in the general plan. The Institute invites constructive criticism from all with the idea of improving the plan before it is put into operation.

Special attention was attracted by the electrical transcriptions played during the presentation of the advertising program before the convention assembly. The first known to have been made for anyone in the telephone field, they are excellently done by the Doring sisters, one of the nation's leading trios, and Guy Wallace, popular announcer, under the direction of T. T. Morrow.

R. A. Phillips, chairman of the USITA Advertising Committee urges all telephone companies to send their applications or inquiries direct to the Telephone Advertising Institute, 326 West Madison Street, Chicago 6, Illinois so the program can be started immediately. (See advertisement on pages 14 and 15).

PORTER HAND POWER CUTTERS

These tools go *to* the job and are used *on* the job independent of any power source — except a worker's two hands. This power is so multiplied that an average worker can exert sufficient pressure to " lift an elephant —."

This power delivered at the working head finds many applications in metal cutting and fabricating — emergency, repairs, on construction, shop or production.

The illustration above shows a Porter Bolt Clipper head cutting a 5/8" annealed bolt in the thread. In addition to standard tools for cutting wire, cable, chain, flat bars, splitting nuts, etc. there are special tools for Heading, Pressing, Crimping, Punching, Caulking.

FREE Write for Free copy of Tool Maintenance Book boiled down essence of practic ' experience in use and care of clippe saws, chisels and other hand tools. A post card request will bring it postpaid. *Also write for catalog of Porter line of Cutters.*

H. K. PORTER, INC., 421 Ashland St., Everett 49, Mass.

PORTER HKP CUTTERS

Personalities IN THE NEWS

Guy O. Seaton has been appointed personnel superintendent of the Lincoln (Nebr.) Tel & Tel. Co. according to announcement of **John H. Agee,** vice president and general manager of the company.

•

E. A. Dearth, Redondo, Calif., commercial manager of the Associated Telephone Co., Ltd., exchange there, experienced a loyalty very unusual while undergoing a major operation recently. Company associates on hearing that **Mr. Dearth** needed transfusions at the Los Angeles hospital immediately volunteered six pints of blood to the Redondo blood bank.

•

Elizabeth Dull of the Harrisonburg (Va.) Telephone Company is editor of that Company's magazine "The Relay." **Fred Switzer,** president of the company, was telling us about their magazine while at the Executives Conference last month and we acknowledge our first copy. **Miss Dull** is herewith tendered the blue pencil and smutty nose that is the badge of every editor.

•

William D. Mawby, west coast district engineer for the Associated Telephone Co., Ltd. at Ocean Park, Calif., died April 2, following a prolonged illness.

•

Carl D. Brorein, president of the Peninsular Telephone Co., Tampa, gets the prize for traveling during the past month as he has been the principal speaker at the Illinois Convention on April 19, and the Indiana Convention on May 3. His address at these meetings "Our Industry Today and Tomorrow" will be widely quoted.

A. J. Parsons

A. J. Parsons, secretary of the Illinois Telephone Association, notified the Board of Directors of that group at their convention that he wished to retire as soon as a successor is named. At this writing no one has been selected and Mr. Parsons will continue for the time being.

•

Brigadier General H. M. McClelland, Air Communications Officer, addressed the National Academy of Sciences April 24, on the need for keeping ahead of the enemy in development and research. He represented General H. H. Arnold, Commanding General of the Army Air Forces, at the session.

•

W. T. Clawson, sales promotion manager for the National Electric Products Corporation of Pittsburgh, recently resigned his connection with that firm and is now located with the National Metal Products Company of the same city. This company manufacturers clips for landing mats and doors for motorized machine shops, used in the war effort.

•

T. Baxter Milne, general counsel of the New England Telephone & Telegraph Co., was authorized by the FCC April 25 to hold the position of vice-president and director of the Canterbury & Loudon Telephone Co. and of the Western New England Telephone Co. and director of the Northern Telephone Co. and White River Valley Telephone Co.

•

Gordon J. Berry, of the Electric Products Co., has been appointed a member of the American Standards Association's Committee on Preferred Voltages of 100 volts and under.

•

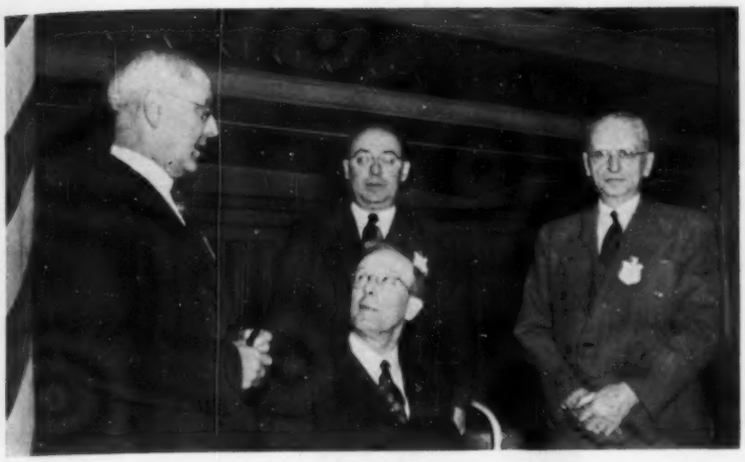
M. O. Trego, for the past 11 years manager of the Mt. States Tel. & Tel. Co., at Gillette, Wyoming, has purchased the Mona Short Line Telephone Co. of Sundance, Wyoming from **J. L. Cook,** who had operated the company for the past 35 years.

•

Verne B. Clark, manager of the Middle States Tel. Co.'s exchange at Pekin, Ill., was honored by USITA Advertising Committee **Chairman Phillips** for his efforts over the past few years to get a centralized advertising material source for the Independent industry. **Mr. Clark** has been head of the Illinois Association Advertising Committee for several years.

•

Glenn Walton has been made manager of the Emmetsburg, Ia., exchange



Frank L. McKinney (seated) announces his retirement as secretary of the Ohio Association. Standing, Gustav Hirsch; Ralph Mateer, new Ohio Association president; and J. T. Carliss.

of the Central Iowa Telephone Co. He succeeds **Warren L. Stanley,** who resigned recently to serve in the Navy.

•

Frank L. McKinney, secretary-treasurer of the Ohio Independent Telephone Association, was re-elected to that post at their convention recently. At the same time, he notified the Board of Directors that he wished to resign and retire as quickly as a successor could be selected. **Frank** will move to southern California following his more than a quarter century service to the Ohio association.

•

Ralph F. Mateer, secretary and general manager of the Warren (Ohio) Telephone Co., was elected president of Ohio Independent Telephone Association last fortnight succeeding **J. T. Carliss.**

•

William F. Parish, owner of the Pinedale (Wyo.) Telephone Co. since 1914, has been made a life member of the Telphone Pioneers of America.

•

Local wire chief for the Bell Telephone Co. at Gallipolis, Ohio, John W. Frazier has retired after 50 years of continuous service.

•

Chairman George McConnaughey, of the Public Utilities Commission of Ohio, recently announced his candidacy for the post of Chief Justice of the Supreme Court of Ohio, which position will be filled for a term of six years by voters at the November elections.

Missouri Exchange Purchased

The Middle States Utilities Company of Missouri has filed application to sell the telephone exchange at Winston, Mo., with the Missouri commission. The Inter-County Telephone Company filed jointly their application to purchase the property.

PENTA POLES

NAUGLE

FULL LENGTH TREATED

NONE BETTER

FOR LASTING SERVICE

Many extra years of trouble-free service are added to the already unexcelled long life of natural Northern White Cedar Poles by the Penta full length treatment. NAUGLE, for over 60 years a well known supplier to the telephone field stakes its reputation on EVERY claim made for PENTA Poles.

★

Penta means a full length treated Northern White Cedar Pole. Treatment is from butt to top in highly chlorinated phenol solution.

We will be pleased to quote you on your next order.

NAUGLE POLE and TIE CORP.

Western & Northern Cedar Poles

317 Plymouth Bldg., Minneapolis

ACORN INSULATED WIRE

TODAY TELEPHONE WIRE has to be tough

Follow the lead of the man who has standardized on ACORN. Stop that costly march to the scrap heap.

ACORN INSULATED WIRE COMPANY, INC.
225 King Street, Brooklyn, N. Y.
LEICH SALES CORP., 427 W. Randolph St., Chicago
LINDSAY SUPPLY CO., 4815 Superior Ave., Cleveland

PREVENT ACCIDENTS! ACORN'S exclusive Carton Packaging for Safety and Better Warehousing.

Drop Wire—Bridle—Interior—Tree—Ground—Switchboard—Pothead—Cable Terminal—Instrument—Fixture—Buried Wire

"and that's that"

...because he used Amertel

This typical American expression of finality describes exactly how telephone men feel when they string Amertel wire. They know that sound engineering and lasting construction calls for the very qualities offered by Amertel galvanized iron or steel wire.

This is true regardless of weather and local conditions for there's an Amertel wire for the longest span or the shortest span . . . for the heavy loading zone and the light loading zone.

And, right now this extra strength and quality that's in every inch of every type of Amertel is more important than ever. It helps do away with repairs, replacements and service calls. The job is done—"once and for all"—when you use Amertel.

USS Amertel TELEPHONE AND TELEGRAPH WIRE AMERICAN STEEL & WIRE COMPANY

DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET · CHICAGO 7, ILLINOIS

New Safety Ladder

The Duò-Safety Ladder Corporation of Oshkosh, Wisconsin, has developed a new safety ladder that is available for immediate delivery. Write for their descriptive material on their new type Series G heavy duty lightweight folding ladder at the above address. Their ladder folds into a bundle 3'x3' and has a special lock that keeps the ladder absolutely rigid in the open position. Pictured is the equipment. Mention TELEPHONE ENGINEER when writing to get complete data.

Walter P. Arnold

Elected to Lead Wood Preservers Group

Walter P. Arnold, technical director of Koppers Company, Wood Preserving Division, was elected president of the American Wood-Preservers' Association at its fortieth annual meeting in Chicago, April 26.

He had served for the past two years as vice-president of the association which numbers over 800 members representing both suppliers and users of treated timber including railroads, public utilities, government agencies, marine firms and industrial and building contractors.

At the ceremonies pictured, the Stromberg-Carlson Company is proudly raising its Army-Navy "E" flag with two stars.

Stromberg-Carlson Officials Raise Second Star to "E" Flag

Marking the second six months of high production for war, since its original award in January 1943, Stromberg-Carlson officials and members of the labor management production drive committee attend occasion in a simple ceremony outside the Rochester war plant. Left to right: Floyd A. Lindsley, Rochester representative, War Production Board, Dr. Ray H. Manson, general manager, Harry Barrows, assistant personnel director, T. C. Westmiller, union representative, Lt. P. B. Alger, U.S. N. R., resident Naval inspector; Stuart K. Beecher, personnel director, S. R. Curtis, plant superintendent, Lt. J. A. McMahon, resident Signal Corps inspector; W. H. Hadley, union representative, Harold Charles, president Rochester Independent Workers, Local No. 1, S. H. Manson, manager, public relations and executive secretary, War Production Drive Committee and Lee McCanne, secretary and assistant general manager of the company. Shortly before the award, the company announced that it had reached its greatest production peak in fifty years in the business of communications.

Honored by Purdue

J. W. Dietz, industrial relations manager of the Western Electric Company's manufacturing department, who at present is on leave for service with the Government, has been awarded an honorary degree of doctor of engineering by Purdue University from which he graduated in 1902.

His citation read: "In recognition of his distinctive leadership in the establishment of better industrial relations through training supervision, and mutual understanding."

Named AT&T Information Manager

Walter M. Reynolds, general information manager of The Bell Telephone Company of Pennsylvania, has been appointed information manager of the American Telephone and Telegraph Company, it was announced recently. He took over his new position May 1.

Mr. Reynolds joined the Bell Company in 1929 after spending five years as a reporter on the Philadelphia Even-

IMPROVE PARTY LINES

ELIMINATE NOISE
with the
Improved RTC-2 VINCENT
RARE GAS RELAY
for harmonic or coded bells

Dual purpose device which economically improves both ringing and transmission on party lines.
NO MOVING PARTS.
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ing Ledger. His first position was that of assistant editor of The Telephone News, the company's employee magazine. He later was editor and then became general information supervisor. He was appointed general information manager in 1941. In addition to his telephone work, Mr. Reynolds has for the past two years served as program chairman for The Poor Richard Club, well-known Philadelphia club of advertising and public relations men.

He will be succeeded as general information manager by Earl H. Weaverling, editorial director for the Bell of Pennsylvania. Ralph A. Nixdorf succeeds Mr. Weaverling as editorial director in charge of company publications.

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